





THE GENERAL PRICE LEVEL OF STOCKS, 1890-1918

BY

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IN

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OF THE

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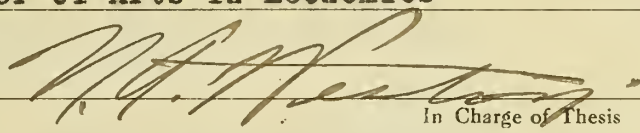
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I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY  
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## CHAPTER I. INTRODUCTION

The prices of stocks listed on the New York Stock Exchange are subject to wide variations in price from time to time. In the first place, particular issues of stocks fluctuate in price as the condition of the corporation issuing them changes. In the second place, these same stocks considered as a group, or as a unit, fluctuate in price as the condition of business enterprise, generally considered, changes. This second movement is said to be the general movement of prices for stocks, and when we speak of the prices of stocks considered as a group or as a unit, we are speaking of the general price level of stocks.

This terminology has been borrowed from that employed in the statistics of price levels for commodities\*. Since the prices of stocks have a general price level in just the same sense that the prices of commodities may be said to have such a level, it is quite in order to employ this terminology here. The general price level of commodities is represented by an index number. These index numbers are made up in a number of different ways, but the principle underlying them all is the same. The general price level of commodities is represented by selecting a certain number of commodities which are believed to be representative for the purpose at hand and then using <sup>their</sup> prices as a criterion of the general price level of commodities. A sum, average, median, mode, or percentage based on the regular series or the harmonic series may be used in obtaining one number which is held to show the absolute or relative price for the particular period\*\*. The general price level of stocks may be expressed in a similar manner. It is possible to select a list of securities, make an average of their prices for each month of the period considered, and use these averages as an index number of the prices of stocks for this period.

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\*Cf. U.S. Bureau of Labor Statistics #173, Wholesale Prices, entitled, The Making and Using of Index Numbers, by Dr. W. C. Mitchell.

\*\*Ibid.



Two index numbers of the prices of stocks have been prepared for the period 1890 to 1918. One index number represents the general price level of railroad stocks and the other index number represents the general price level of other stocks. Both of these indices are based upon monthly data and a full description of the nature and source of the data used and the method used in their preparation is given in Appendix A.

It is proposed to compare and correlate these indices of the prices of stocks with certain other indices of the condition of business enterprise. These other indices are:-

Earnings and Dividends Group:

Interest Rates:-

- Call loans at the New York Stock Exchange
- Rate on 60-90 day single name commercial paper
- Rate on 4-6 months "choice" commercial paper
- Average rate of interest on 10 American railway bonds

- Average loans of the New York City banks
- Average deposits of the New York City banks
- Average reserves of the New York City banks

Total quantity of money in circulation in the United States

Business Enterprise Group:

- New incorporations in the eastern states
- Building permits involving more than one million dollars
- Number of business failures
- Unfilled orders of the United States Steel Corporation
- Tonnage of pig iron
- Shipments of anthracite coal
- Clearings of the New York City banks
- Clearings of banks outside New York City
- Listings of stocks on the New York Stock Exchange
- Listings of bonds on the New York Stock Exchange

Foreign Trade Group:

- Average rate of sterling exchange
- Total imports of the United States
- Total exports of the United States

Commodity Prices Group:

An index number of the prices of raw materials





An index number of the prices of manufactured commodities  
An index number of the prices of all commodities

Crop Production Group:

Production of wheat  
Production of corn  
Production of oats  
Production of potatoes  
Production of cotton

Stock Exchange Activity Group:

Volume of sales on the New York Stock Exchange  
Clearings on all the stock exchanges in the United States

Psychological Factors:

These indices, which have been termed "psychological factors", consist of news items dealing with important events, judicial decisions, legislative enactment, advance crop reports, etc.

All of these indices, including those of the general price level of stocks and except the psychological factors, have been plotted upon graphical paper. A separate chart has been used in the case of each group of indices. Monthly data <sup>have</sup> ~~has~~ been used for all the indices except those for earnings and dividends, listings of stocks and bonds on the New York Stock Exchange, and production of crops. Annual data <sup>have</sup> ~~has~~ been used for those indices where it was not possible to obtain representative monthly data. A complete description of the nature and source of the data and the methods employed in plotting the data for these indices upon the charts will be found in appendix A. A full set of blue prints of these charts will be found appended to this study. It was not possible to plot the psychological factors upon graphical paper, because of the lack of a standard unit of measure for these items. In chapter X, the important psychological factors are mentioned in connection with the period to which they pertain. A description of the nature, source, and collection of this information will be found in appendix A.

The object of the correlation and comparison of the indices of the prices of stocks with the various groups of other indices is twofold. In the



first place, it is desired to unravel as much as possible of the causal nexus underlying the fluctuations of the prices of stocks; to find out to what extent the prices of stocks are governed by economic factors and conditions; and to estimate the possibility of formulating a law or series of laws underlying the movements that the general price level of stocks makes. In the second place, it is desired to examine the general price level of stocks and to see to what extent it is representative of the condition of business enterprise; to see if an index number of the prices of stocks fluctuates with changes in business enterprise; and to see if it is a satisfactory "barometer" for use in determining business policy.

The chapter plan of this study follows the grouping that was used in the case of the various indices. In chapter II, the general price level of stocks is considered independently of any other indices. In chapter III it is compared and correlated with the earnings and dividends group of indices. In chapter IV the general price level of stocks is compared and correlated with the monetary and banking group of indices. This chapter plan and arrangement is carried through until all the groups of indices have been compared and correlated with the general price level of stocks. The last chapter deals with the conclusions and results of this investigation. At the end of each chapter, except the last one, will be found enumerated the particular results of the correlation and comparison that was made in that chapter. There is also included an appendix and a bibliography. The appendix deals with the nature and source of the data, the making of the various indices, and the making of the charts and graphs. The bibliography is composed of selected works on the subject of crises, scientific method, history of the period 1890-1918, investment and speculation, and sources of data. The scope of this investigation does not warrant any extended discussion of these various topics covered by the bibliography outside of those





things that are absolutely essential to a proper grasp of the material presented and the problem at hand. The various kindred fields touched by this investigation are fully covered by the works listed in the bibliography and the reader is referred to the works there mentioned for a discussion of these related topics.

In order to make the discussion in the following chapters as clear as possible, the technical words and phrases used will be defined and discussed in the remaining paragraphs of this chapter.

#### Definition of Terms:

General Price Level of Stocks:- This phrase refers to the prices of the stocks listed on the New York Stock Exchange considered as a group or as a unit in contradistinction to the prices of particular stocks. In this discussion, the general price level of stocks is represented by an average of the prices of a selected list of railroad and other stocks in just the same manner that an index number of commodity prices is held to represent the general price level of commodities.

Index (plural, indices):- The word index, or indices, refers to a series of data which is held to represent numerically some phase of business enterprise or of economic conditions.

Graph:- In this investigation the word "graph" refers to an index which has been plotted to a definite and symmetrical scale so as to bring out all the movements and variations which are held to be important for purposes of this investigation.

Chart:- The word "chart" refers to the record upon which the various grouped indices have been plotted.

Psychological Factors:- This phrase refers to those things which are held to affect the general price level of stocks or the condition of business enterprise, which do not lend themselves to graphical treatment because of the lack of



a standard unit of measurement.

Secular Trend:- Secular trend refers to the movement that some of the indices make, which is persistent; of duration of the entire period compassed by the data; which is not cyclical or periodic; and which shows the long-time, general, movement of that phase of business enterprise which the particular index is held to represent.

Major Cycle:- This term refers to the longest periodic movement that some of the indices are observed to make, which is composed of at least two phases; a period of rising values and a period of falling values. The duration of this movement for a complete cycle varies between seven and fifteen years.

Minor Cycle:- This term refers to the second to largest periodic movement, that some of the indices are observed to make, which is composed of both a phase of rising values and of falling values. The duration of this movement for a complete cycle varies between two and five years.

Seasonal Cycle:- This phrase refers to the smallest periodic movement, that some of the indices are observed to make, which consists of a phase of rising values and a phase of falling values, and which is always embraced within a single year.

Month to Month Variation:- This phrase refers to those movements, that some of the indices are observed to make, which is of a highly irregular character, is not cyclical or periodic, and which never exceeds a month in duration.





CHAPTER II. THE GENERAL PRICE LEVEL OF STOCKS INDE-  
PENDENTLY CONSIDERED.

The data for the indices of the prices of stocks <sup>have</sup> ~~has~~ been plotted in graphical form on a chart which will be found appended to this study. This chart is composed of two graphs as follows:

1. An Index Number of the Prices of Railroad Shares.
2. An Index Number of the Prices of the Shares in other Corporations.

The data for these two indices is monthly in character throughout.

There are four distinct movements which these indices are observed to make. In the first place, considering both lines in the whole, they are observed to make a general movement upward extending over the entire period from 1890 to 1918. This general movement is by no means steady, but is quite irregular in character and embraces many smaller movements within itself. The name "secular trend" has been applied to this movement.\*

Now this upward secular trend, in the case of the prices of stocks, may indicate one of four things. It may seem that, during the period considered, business enterprise was becoming more profitable. In the second place, it may mean that the gradual increase in the general price level of stocks merely reflects the effect of a gradual increase in the quantity, or velocity of circulation, of the amount of money and credit. In the third place, it may mean that business enterprise has remained stationary in profits, but that the average rate of return on investments has been lower, and that this downward tendency in the

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\*Cf. The Review of Economic Statistics, prel. vol. 1, no. 1, p 8; Persons, W. M., The Variate Difference Method and Curve-Fitting, Quarterly Publications of the American Statistical Association, June, 1917; Persons, W. M., The Construction of a Business Barometer; Annual Data, The American Economic Review, December, 1916.



investment rate of interest has been reflected by an increased capital value in the shares in business enterprise. Finally, such an increase in the secular trend may be due to some combination of the proximate causes already mentioned. These questions cannot be settled definitely until the work of analysis and correlation has been completed.

The movement next in size to the secular trend has been given the term of "major cycle". The indices show one complete major cycle and the greater portions of two other major cycles. The first major cycle that the data shows begins in January, 1890, and extends to August, 1896. This is not a complete major cycle, but the greater part of the first half movement which began about 1886. This half is a "valley" type; that is, it is a period during which values are ~~reflectively~~ low. After August, 1896, values take an upward turn and from August, 1896 to September, 1906 there is a complete half of a major cycle of the "crest" type, that is, when values are relatively high. During this period, there is one peculiarity that is quite noteworthy. Although the values of railroad and other shares follow each other quite closely, the railroad shares are at a much higher level than the other shares. There is a difference, on the average, of between forty and fifty points and this difference extends over the entire period compassed by the major cycle - approximately ten years. There will be a certain amount of difficulty in explaining this phenomenon, because it is difficult to conceive of such a wide discrepancy extending over such a long period of time. This point will receive attention in chapter III. After September, 1906, the third major cycle can be noticed, which extends through 1918, as far as the data is carried. This movement is but half of a complete major cycle and is of the "valley" type. During its period, values, relatively speaking, declined.

Each one of the major cycles embraces within it two or more "minor cycles". The minor cycle resembles the major cycle greatly, and they are superimposed upon the major cycle, but they are of considerably smaller duration, ~~and~~





intensity. These are the cycles usually referred to as the "business cycle movement".

The first half of a minor cycle embraced by the data is one which begins in January, 1890, and ends in December, 1890. During the first four months of 1890 values for both railroad and other stocks rose. In May of the same year a sharp decline followed which lasted until December, 1890. This is often referred to as the panic of 1890. This panic manifested itself in England, the continent, and the United States at about the same time.\* In January, 1891, a recovery from the panic of 1890 set in and values rose steadily until January, 1893. The January, 1891 to August, 1893 period, then, embraces the second minor cycle, which lasts for exactly two years and eight months. After January, 1893, a reaction set in and there is a depression from this time to May, 1897. This was a period of long and continued depression save for a few months of reaction in 1895. The area embraced by this depression is a large one. This period is generally referred to as the panic of 1893\*\*. The area compassed by the period of low values is great. In June, 1897 values again turn upward and the ensuing rise lasts until January, 1903. This is a period of sharply rising values of fairly uniform trend, and is commonly referred to as the reaction from the panic of 1893, or the period of business activity in the late nineties. This period was characterized by a buoyant feeling among business men, promotion of new enterprise, and integration among older establishments. A few months before January, 1903 there was a small decline and rally on the part of railroad stocks. The decline, however, set in definitely, for railroad stocks in January 1893, but it was not until the following February that the other stocks turned definitely downward. The decline lasted until May, 1904, for both groups of stocks and is commonly referred to as the panic of 1903 and 1904. The decline was a rather sharp one, but it did not compass the area that the panic of 1893 embraced. The period of decline was not

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\*For a discussion of the panic of 1890 in the U.S. and elsewhere see Lauck, W. J., The Causes of the Panic of 1893, Chapters I to VI, incl.

\*\*Ibid., Chapters VI to end.



followed immediately by a rise in price, but the prices stayed at a low level for approximately a year. The rise in price that began in May, 1904, culminated in September, 1906, for railroad stocks, and in October, 1906 for other stocks. The rise in price was a sharp one and of fairly steady growth. This rise was stopped by the severe panic of 1907 which began in September-October, 1906 and culminated in February, 1908. A very rapid decline of short duration characterized this movement, which is commonly referred to as the panic of 1907, the "Wall Street panic", or "the rich man's panic". The recovery from this panic began in February, 1908, and ended in August, 1909, for railroad stocks, and in November, 1909 for other stocks. The recovery was equally great as the decline had been. A period of decline again set in which ended in July, 1910 and was followed by a very gradual rise until September, 1912. This rise was then followed by a period of decline ending in the closing of the New York Stock Exchange in August, 1914, when the stock exchange was in a condition of panic over the European war situation. This period of decline was not a period of panic, but in July and August, 1914, it became apparent that a severe panic would occur unless immediate steps were taken to prevent further liquidation upon the exchange. The exchange was then closed. The break in prices that occurred in July and August, 1914 is referred to as the panic of 1914, or "the great war panic". The New York Stock Exchange was re-opened in December, 1914 and a rise in the prices of stocks set in which lasted until November, 1916. This rise was followed by a decline which was of some severity and culminated in November, 1917, a new rise beginning at this time lasting until December, 1918, where the data stops.

These alternate rises and declines are of a duration from slightly less than a year to approximately five years. These movements, like the major cycles, are cyclical in character, reaction always following action. They have been termed the "minor cycle" to differentiate them from the larger cyclical swings.





The minor cycles compass still another series of movements of a highly irregular character. These are the movements lasting from three to twelve months in time. At least two distinct movements can be distinguished: the first is a cyclical movement, highly irregular in its occurrence, but nevertheless quite persistent in its appearance; the second is an irregular month to month movement, which is not cyclical in its character. It may be thought that the first of these two smaller movements is a seasonal variation, and a careful examination of the graph shows that this is the case. Seasonal variation usually is fairly regular in its occurrence. There are many influences which operate to destroy the uniformity of these seasonal variations. They are, however, persistent and characteristic enough to be distinguished as such.\* Just what these causes are remains to be seen as we proceed with the analysis. The term "seasonal cycle" has been applied to these movements. The remaining irregular movements have been termed "monthly variations".

This entire division of the graph into movements and cycles is a purely arbitrary one. The secular trend may be only a part of a much larger movement, cyclical in character, that is not shown by the data. However, it appears on the graphs used here as a trend rather than a cycle, and we have no means of telling whether it is a part of such a larger movement or not. This could best be done by taking annual data for as long a period as possible, and plotting it on a graph to a small scale. The terminology and classification of movements herein given is also an arbitrary one, used merely on account of convenience for purposes of this study, but it has general acceptance among economists. The cyclical and other movements are distinct and real. The secular trend and the major, minor, and seasonal cycles are the points of great interest. We are faced with the questions; why has the secular trend been upward? What is indicated by this

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\*The Review of Economic Statistics, prel. vol. 1, no. 1, page 8.



fact? Why have we movements of a fairly regular cyclical character? Why are they cyclical? These are the questions to be faced at the beginning of the work of analysis.

In studying the cycles, especially the minor cycle, certain important characteristics can be noted. The first point is the size of the area compassed by a complete cyclical movement, i.e.; a decline and reaction. The second point is the shape of the area embraced. An area where the temporal element is longer than the quantitative or price element, that is, an area which may be called a broad one, is a period of long standing depression. Here the business man is able to retrench for a period of inactive business and has the time to adjust his business to face the new conditions. The wage earner is likely to find a smaller compensation for this period as a result of such readjustment. An area where the temporal element is shorter than the quantitative or price element, that is, an area which may be called a narrow one, is a period of rapid decline in price followed quickly by an equally rapid reaction. This type of cycle is likely to bring many failures in its wake, with very little time for entrepreneurs to adjust themselves to new conditions. Such businesses as are able to withstand the shock have an excellent opportunity to make money during the period of rapid recovery. Although many wage earners may be temporarily out of work, the decline in wages will not be nearly so general as in the case of the other type of cycle, and they will soon be able to sell their services on a rapidly rising market. The economics of these two types of cycles as well as the psychology of them, will be examined and discussed as the analysis proceeds with the various factors.

Attention has already been drawn to the fact that some differences exist between the prices of railroad stocks and other stocks. On the whole, the movements follow each other rather closely and there does not appear to be any marked lag between these two groups. In some instances other stocks rise or fall without any apparent movement of like nature on the part of the railroad stocks





and vice-versa. It is difficult to draw any general statements as to the regularity of movement between these two groups of stocks, such as size of movements, smoothness of movements, or number of different movements. In some instances the other stocks group will show the greater variation along these lines, and in other instances the railroad stocks will show the greater variation. The most outstanding fact has <sup>not</sup> ~~already~~ been mentioned; that is, the differences in the general level of the railroad stocks group and the other stocks group at certain intervals. From January, 1890, to January, 1893 there is a difference of approximately ten points between the two levels. From January 1893 until the break in the line at December, 1899, the two groups continue at nearly the same level with the railroad group at a slightly higher level. From January, 1900 until the time of the closing of the stock exchange, a period of over fourteen years, the railroad stocks are at a very much higher general level than the other stocks group. In the years 1907 and 1908 this difference is less pronounced than at the other times. After the re-opening of the exchange in 1914 the two groups come together gradually, with the railroad group at the higher level, and they continue to move closer together as the end of the data appears.

Why is it that the railroad group is at a consistently higher general level of price than the other stocks? Since it is apparent that the condition of the railroads is dependent upon the condition of business in general it is difficult to see just why there should be this discrepancy between the movements of the two groups. The answer to this question must show that either one or the other of the groups of stocks is not representative of the condition of business enterprise, or else there are important differences in the method of capitalization or earning ability between railroads and other industries. If the data is representative and accurate, then it must be that the industrial or other enterprises are overcapitalized relative to the railroad enterprises, or else their earning ability is greater, or that they enjoy more favor with investors. A



greater earning ability may come from high freight rates or some maladjustment of conditions in manufacturing enterprise. It is possible to conceive that there can be heavy shipments of freight during a period when business enterprise is not being conducted on a highly profitable scale. This condition might be brought about by a period of falling commodity prices; a period where the prices of raw materials are advancing faster than manufactured commodities; or, finally, where business enterprise is being poorly managed, especially with reference to knowledge of costs. In order for railroads to make money while other industries are doing poorly, it is necessary for the shipments of freight to continue, and this condition could only be found where business enterprise is being conducted on a considerable scale, even though it is not highly profitable. If the difference in the general level of stock prices between railroad and other stocks is not due to differences in earning ability, then we must look to differences in capitalization for our answer. No complete answer to these questions can be given until the work of analysis and correlation has been completed.

The word "cycle" may be open to two possible interpretations. It is usually held to mean a complete movement, decline and reaction, or rise and reaction, where prices will be at the same level at the completion of the movement that they were at the beginning. On the other hand, the word may be held to mean merely one half of a completed movement, from the point where the rise or decline begins to the point where it ends, neglecting entirely the reaction. In measuring cycles in this study it is the latter meaning that has been used. The cycles are studied by examining each half at a time. While this may not be logically as sound it has the great advantage of convenience for the work of analysis and correlation, and this is the reason for its adoption. In order to be classed as cyclical, movements must show a reaction of opposite nature to the action. No movements which fail to show this tendency have been classed as cyclical in this study.





A great deal more might be said about the movements of the general level of prices for railroad and other stocks than has been done here, but these other considerations will be brought out in analyzing and correlating the general price level of stocks with the various other factors. Attention has been drawn to the principal movements of these prices and to the character of these movements. Their significance and importance will become apparent in the following analytical chapters.

Conclusions and Summary:

1. That there are four movements characteristic of the general price level of stocks, namely;

(a) The secular trend, which, in this case, is a steady and gradual upward movement of the prices of stocks. The occasions for this movement may be either changes in the general level of prices; changes in the condition of business enterprise; changes in the capitalization of corporate industries; or changes in the market rates of interest.

(b) The major cycle, the largest cyclical movement which these prices appear to make, which is a movement of from seven to fifteen years in duration. The occasions for these major cycles is not apparent with the analysis in its present stage.

(c) The minor cycle, a cyclical movement of a shorter duration than the major cycles, usually from one to five years in duration. The occasions for this movement are not apparent with the analysis in present stage.

(d) The seasonal cycle, the shortest cyclical movement, of from six to twelve months in duration. The occasions for this movement are not apparent with the analysis in its present stage.



2. The general level of the prices of railroad stocks is at a higher level than that of other stocks. This is believed to be due to the fact that business enterprise is subject to certain maladjustments, which affect the rate of profit for industries, but do not greatly cut down the traffic for railroads, and also to the fact that railroad securities find greater favor with the investing public than do other securities.





CHAPTER III. THE GENERAL PRICE LEVEL OF STOCKS AND  
EARNINGS AND DIVIDENDS.

It is the object of this chapter to call attention to some of the more outstanding relationships existing between the general level of prices of stocks, both railroad and other stocks, and the earnings and dividends of these corporations. The "Earnings and Dividends Group" is to be correlated with "The Index Number of Stock Prices". As stated in Appendix A, earnings and dividends have been recorded not only for the corporations whose stock prices were used in making up the indices of stock prices, but also for corporations not so used. The list of indices comprising the "Earnings and Dividends Group" are as follows:-

Annual Dividend Payments, Railroads used on stock price index  
Annual Dividend Payments, other corporations used on index  
Annual Gross Earnings, railroads used on index  
Annual Dividend Payments, all railroads  
Monthly Gross Earnings, ten leading railroads

The reader is referred to Appendix A for the source of this data and for the logical reasons which led to its selection.

The graphs for the indices mentioned above have been plotted on a chart labelled "Earnings and Dividends of Railroad and Other Corporations". This chart will be found appended to this study.

With one exception, the data for the earnings and dividends group <sup>are</sup>~~is~~ entirely annual in character. For this reason, many of the smaller movements that the prices of stock show, will have no counterpart in the movements of the earnings and dividends. However, most of the larger movements are quite distinct. In the first place, all five graphs exhibit the upward secular trend quite clearly. The secular trend moves upward at approximately the same rate that the secular trend moves upward in the case of the prices of stocks. In the next place, the major cyclical movement is quite apparent and corresponds very



closely to this movement in the case of the prices of stocks with the exception of the upward half of the second major cycle. In the case of the prices of stocks this major cycle begins in 1897 and ends in 1909, about a year and a half before the same cycle ends for earnings and dividends. All four groups of the annual data do not show the same minor cycles. While the minor cycle is present in all of them, it is not of the same intensity and duration for them all, and no general statement can be made as was the case with the secular trend and the major cycles. This will serve to indicate that there might be some fundamental difference between the minor cycles and the two larger movements, secular trend, and the major cycle - no definite statement can be given on this last point until we observe this tendency in several more groups. Of the movements smaller than the minor cycle, the seasonal cycle and the monthly variations, nothing can be said with the annual data. The monthly data, however, show both these two smaller movements quite distinctly. This is another indication of the superiority of monthly data over annual data for a study of economic factors, especially for the smaller cyclical movements. For an examination of the secular trend, with the idea in mind of determining whether this is a real trend, or merely a part of a much larger cycle than has yet been discovered, annual data <sup>are</sup> ~~is~~ superior. It may also be superior in some instances for a careful examination of some of the larger aspects of the major cycle. But for the purpose of studying movements of a shorter duration, such as the business cycle (minor cycle), the monthly data <sup>are</sup> ~~is~~ by all odds the better, and it is to be regretted that it was not possible to obtain accurate and representative monthly data for all the groups used in this investigation.

#### Railroads and Dividends:

The graph of the prices of railroad stocks is similar in curve to that of the payments of dividends. This is as had been expected, because it is the





prospect of earnings that gives these shares their value. Economists agree that the capital value of a share of stock, or any durable agent for that matter, is the capitalization of the income therefrom derived at the current rate of interest. It is the common practice of business to so evaluate income bearing property. Now in studying the indices of dividend payments of corporations whose stocks were used on the index number of stock prices, care must be used to see that the element of time for this factor agrees with the same element for stock prices. The data for the dividend payments <sup>are</sup> ~~is~~ annual in character, and when an item is given for the dividend payments for the year, say, 1890, it is meant for the year ending 1890. But the prices of stocks for the year 1890 are those prices actually pertaining to that year. In making a comparison, then, between stock prices and dividends, the dividends for 1891 must be compared with the prices of stocks during 1890. That is to say, the graph for dividends must be moved one year ahead of the graph for stock prices. In the case of dividends on all railroads, it is only necessary to move the graph six months ahead in making the comparison, for this series has been obtained from The Statistical Report of the Interstate Commerce Commission, and the fiscal year ends for them on June 30th. Thus the graph of dividends of railroad corporations whose stocks were used in computing the index number is really one year behind the graphs of the index numbers of stocks, while the graph of dividend payments of all railroads is but six months behind.

When we have moved the graphs showing the dividend payments of railroads used on the index one year ahead of the graph showing prices of stocks of railroad corporations, it will be noted that the prices of stocks anticipate the dividend payments by a period of about six months. There is but one exceptional year on the graph; this is 1891, where dividend payments decline, while the prices of stocks rise for the year immediately preceding. This can be expressed by saying that the graph of dividend payments has about a six month's lag behind



the graph of railroad stocks. The period of lag cannot be computed with mathematical exactness because the data compared <sup>are</sup> ~~is~~ annual in the one case and monthly in the other. The period of lag varies from three to nine months; six months on the average. Thus it is that putative dividend payments of railroad corporations are discounted into a present net worth of railroad common stocks. The prices of railroad common stocks, then, do not represent current dividends capitalized into net worth, but putative future dividends so capitalized. The purchaser of these shares does not pay for present income, but for putative future income. This fact is of great importance in considering the smaller movements of the prices of stocks.

This same tendency can be noted when the prices of railroad stocks are compared with the dividend payments of all railroads. The correlation is not here so complete nor as regular as it is with the dividends of the railroads actually used in making up the stock prices. In this case the exceptional years are: 1900, 1907, 1908, and 1913. The six month's lag can be easily noted for the other years in this group. This fact would seem to indicate that this tendency is a genuine one and that the selection of stocks has been fairly representative.

#### Other Stocks and Dividends:

The graph showing dividend payments for other corporations represents payments by corporations whose stocks were used in making up the index number of other stocks. There is no graph showing dividend payments for all other corporations. In this case, as in the case of the railroads, it will be necessary to move the graph of dividend payments one year ahead of the prices of the stocks of other corporations, because dividend payments are here recorded for the year ending 1890, and so on, rather than for the year 1890. If this graph will be moved ahead as indicated, the same characteristic six month's lag can be noticed as was noticed in the case of the railroads. This correlation is not so regular





for the other stocks as it was for the railroad stocks. The exceptional years are: 1894, where the stocks rise for that year, but the dividend payments fall for the ensuing year, and 1899, where the stocks rise for that year, but dividend payments fall for the ensuing year. The fact that the correlation is not so clearly marked for other stocks as it is for railroad stocks may lie in the fact that the list of other stocks is not so large nor as representative as the list of railroad stocks. It may also lie in the fact that investors at certain periods have expected returns at a different rate on railroad stocks from other stocks.

In connection with the dividend payments there is yet one other important set of facts to be noted. This will be apparent when the levels of the four groups of factors (railroad stock prices, other stock prices, dividend payments for railroads used on index, and dividend payments for other stocks used on index) are compared. Although the dividend payments for other stocks are, in many instances, higher than the dividend payments for railroad stocks, the prices of the other stocks are at a lower level throughout than the prices of railroad stocks. This indicates that traders in stocks capitalize dividends of railroads at a lower rate of interest than they do other corporations. That is, if a railroad and other corporation both paid four per cent dividends annually, the chances are that the railroad stock would sell at a higher price than the other stock; providing, of course, that both stocks were representative. This fact may be due to some lack of confidence in the other corporations as compared with the railroads, and some further compensation in the nature of risk interest may be demanded from them. This lack of confidence may also be inspired by the relative overcapitalization of other corporations as compared with the railroads. This lack of confidence may be attributed to a very wide variety of causes, but no matter what cause we may attribute it to, the extra payment demanded from the other corporations relative to the railroad corporations may be said to partake of the nature of the payment for risk involved.



It has already been noted that during certain periods the general level of the prices of railroad shares is much higher than the general level of prices of the other stocks. These periods are: 1890 to 1893, and 1900 to 1910. During both of these periods the dividend payments of railroad corporations are at a consistently higher level than the dividend payments of the other corporations. The characteristic lag of the dividend payments behind the prices of the stocks may be noticed here quite clearly. In all of the instances where the dividend payments of other corporation cross the dividend payments of the railroad corporations, going either above it or below it, this movement has been foreshadowed from three to nine months ahead by either a fall or rise in the prices of the one group of stocks relative to the other group. This will serve to further substantiate the fact that stocks anticipate economic conditions.

In chapter II attention was called to the differences in the levels of the two groups at certain periods. It was also said at this point that this difference might be due to the fact that either one of the groups was not representative, that there were important differences in the capitalization of railroad corporations relative to other corporations, or that there was some difference in the earning ability between the two. The fact that other stocks are at a much lower level when the dividends of other corporations are at a much lower level indicates that the cause might be that of earnings rather than differences in capitalization.

#### Railroad Stocks and Railroad Gross Earnings:

The data for the graph of gross earnings of railroads, used on index of stock prices, <sup>are</sup> ~~is~~ annual in character and <sup>were</sup> ~~was~~ taken from The Statistical Report of the Interstate Commerce Commission. The fiscal year used as a basis in these reports ends June 30th. In making comparison, then, between this graph and the graph of the prices of railroad stocks, it will be necessary to move the graph





of the gross earnings six months in advance of the graph of the prices of railroad stocks. The graph of earnings of railroads used in making the index of stock prices extends from 1890 to 1907 only, because the Interstate Commerce Commission changed its method of reporting this kind of data at this point, and it was not possible to obtain a homogeneous series, except at much difficulty, past this point.

The graph of these earnings has the characteristic six month's lag behind the prices of railroad stocks that the graph of the dividend payments on these stocks had. In fact, the graph of the gross earnings and dividends follow each other quite closely throughout. There are but two exceptional years: 1899, where dividend payments decline, gross earnings increase, and the prices of stocks increase; and 1903, where stocks and dividend payments decline and earnings increase. These results are as might be anticipated, because it is only out of earnings, under ordinary conditions, that dividends can be paid, and it is the fact of dividends, or the prospect of dividends, that gives the stock its value.

The graph of earnings has a marked upward secular trend, stronger than the secular trend of the prices of stocks. It exhibits both the major and the minor cycles quite distinctly.

There is yet another graph of railroad gross earnings, which is monthly in character and extends from March, 1903, to July, 1917. This graph shows the gross earnings of "ten leading roads" for the period in question. Details as to the source and nature of this <sup>data</sup>~~graph~~ are given in Appendix A. This graph has a well marked upward secular trend and shows the major and minor cycles also. A very pronounced seasonal cycle can be noted. This seasonal cycle moves somewhat as follows: down in February; up in March; irregularly upward during April, May, June, and July; sharply up during August, September, and October; and sharply down during November, December, and January of the following year. The gross



earnings are influenced to move in this way by the conditions of farming and cattle raising. The period of the greatest upward movement is due to the movement of the harvested crops. These cycles, therefore, reflect the cycles in the farming and cattle raising industry.

The prices of railroad stocks and monthly gross earnings of ten leading roads can only be said to follow each other in a general way. No close month to month correspondence can be noted, except for the seasonal cycles. The panic of 1907 begins in November, 1906 for railroad stocks, but it begins for railroad gross earnings in October, 1907; a lag of ten months is apparent here.

It may be well at this point to set down some of the more outstanding features of the relation of the general price level of stocks with earnings and dividends. Only such conclusions as are warranted by the data, with sufficient persistence to be called probable, are set down.

Conclusions:

1. The general price level of stocks, over a long period of time, bears a close relation to dividend payments and earnings.
2. The general price level of stocks anticipates the payments of dividends by a period of from three to nine months. If the graph representing the general price level of stocks is placed alongside the graph representing dividend payments, a lag of from three to nine months can be noted in the graph of dividend payments. The general price level of stocks does not represent the state of business earnings to-day, but as traders believe the state of these earnings will be three to nine months from to-day.
3. The same rate of return for railroad shares and for other shares will mean a higher capital value for the railroad shares, generally speaking. That is to say, that railroad shares are capitalized at a lower rate of return than are the other shares. The differences in the rates of capitalization may be regarded as a payment for a risk of some kind.





4. The great difference in the general level of price between railroad and other shares, especially noticeable during the period 1900 to 1914, was due to the higher rate of return (dividends) on the railroad shares.

5. From conclusions number one and four, it is apparent that it is the dividends which are the closest influence upon the general level of prices of stocks.

6. Since the general price level of stocks follows dividend payments very closely, it is apparent that the general price level of stocks is representative of the general condition of business enterprise. This argument rests on the fact that earnings, and consequently, dividends, are the essential and distinguishing factors in connection with business enterprise. The reward of business enterprise, of the entrepreneur, is profits; it is the receipt of these profits that distinguishes the entrepreneur from all other economic classes. Hence, if the general price level of stocks can be said to follow, or to anticipate, these profits, we are justified in saying that the general price level of stocks is representative of the state of business enterprise.

7. The movements called "secular trend", "major cycle", "minor cycle", and "seasonal cycle" are not peculiar to the general price level of stocks alone, but also to earnings and to dividends of corporate enterprise.

8. That dividends and earnings are <sup>not</sup> the final cause of the condition of business enterprise. They are but one step in a long causal sequence, and they are in themselves the results of some deeper underlying causal nexus.



CHAPTER IV. THE GENERAL PRICE LEVEL OF STOCKS AND THE MONETARY AND BANKING INDICES.

It is not always wise to draw broad general statements saying that the state of the monetary and banking situation governs the condition of business enterprise, or to say that the situation of business enterprise has changed the monetary and banking conditions. Broad, general statements like these can only be made accurately after a thorough analysis of the situation. Each separate period must be studied in itself before an attempt is made to draw any general conclusions. The influence between the two may be said to be reciprocal, and it is altogether possible that a given condition in both the business enterprise and the monetary and banking situation might be caused by other factors, and therefore, the two situations may be both effects of a given set of proximate causes. It is the purpose of this chapter to call attention to the more outstanding relationships existing between the two, and to set down such conclusions as may seem warranted by the facts. The chart of the index numbers of the prices of railroad and other stocks is to be compared and correlated with the indices of the monetary and banking group of graphs. The monetary and banking group comprises the following indices which have been plotted upon one chart under the heading of "Monetary and Banking Group":

Interest rates

Monthly rate of demand loans (call money) at the New York Stock Exchange

Monthly rate of interest on four to six months good single name commercial paper

Monthly rate of interest on sixty to ninety day choice double name commercial paper

Average monthly rate of interest on ten American Railway bonds

Average monthly reserves of New York City Banks

Average monthly deposits of New York City Banks

Average monthly loans of New York City Banks

Total circulation of all kinds of money in the United States by months.





The chart showing these indices will be found appended to this study. The analysis in this chapter will be taken up by movements which the indices of the general price level of stocks and the monetary and banking indices are observed to make. We begin with a consideration of the secular trend.

#### Secular Trend:

With the exception of the four interest rates, a very marked upward secular trend can be noted for all the indices. This secular trend is the most marked for average monthly loans of New York City Banks and for the average monthly deposits of New York City Banks. The secular trend of these two indices follows each other very closely. This is, of course, as would be expected for the bulk of the deposits of New York City Banks are created through the lending process. Any increase or decrease in the loans would then be reflected in the amount of the deposits. The secular trend of the total amount of all kinds of money in circulation in the United States, by months, and the average monthly reserves of the New York City Banks is less pronounced than the secular trend of the other two factors, but, nevertheless, it is quite marked, and the rise is uniform throughout the period. Bank reserves follow the total amount of money in circulation very closely, because some of this money issued is suitable for use as bank reserves. A certain amount of this legal tender finds its way into bank reserves through the operations of the general processes of exchange. When the total amount of circulating media is permanently increased the reserves of banks will usually be increased a proportionate amount. This process is carried on by the increasing of the individual reserve holdings of the various banks, and also by increasing the number of banks. The various processes by which this money reaches the reserves are many. It may find its way directly from the government, or it may find its way through the settlement of balances between banks, deposits and repayment of loans. It is this fact that accounts for the similarity of secular trend between bank reserves and total amount of money in circulation. A long time correspon-



dence between these two factors, rather than a short time correspondence, is the logical result.

It has already been noted that bank deposits and loans have a very much greater secular trend than that of total amount of money in circulation and bank reserves. This phenomenon is due to the fact that a bank only keeps a certain percentage of reserve against its demand liabilities. This percentage varies in different localities and at different times, but bankers in New York have been in the habit of assigning twenty-five per cent as the proper ratio on the average. Now if the reserves of banks are doubled, the lending ability of these banks is more than doubled; it is increased by an amount approximately four times as great as the increase in reserves. The indices show that the secular trend of loans and deposits is approximately four times as great as the secular trend of the total amount of money and bank reserves. This difference is due to the fact that loans, and consequently deposits, increase about four times as fast as the total quantity of money in circulation, and consequently reserves.

The sequence for this process will be somewhat as follows: Increase in the total amount of money in circulation; increase in the amount of lawful money in bank reserves; increase in the loans of banks; increase in the deposits of banks. Thus it is that a small increase in the amount of money in circulation will mean a very great increase in the amount of credit. If other things remain equal, increasing the total amount of money in circulation will serve to raise prices by an amount out of all proportion to the new quantity of money added to the circulation, because this monetary addition means a much greater increase in the amount of credit.

The increasing prices of commodities since 1890 (see graph of commodity prices) is believed to be due to the fact that our monetary and credit circulation has been steadily increased. The very rapid rise in commodity prices since the European War of 1914 is due to the unusual rapidity with which we increased the





amount of money and credit during this period. This increase in money came from two sources primarily: the amount of gold was increased in this country; and a new kind of money, Federal Reserve Notes, was added to our circulation. Bank loans increased proportionally and a great increase in commodity prices was the net result. This is the fundamental explanation of the "high cost of living" that aroused so much attention in 1919 and 1920. This explanation rests, of course, upon the quantity theory of money\*. During a period of inflation, banks will extend credit freely to business men. This enables business men to hold over supplies of goods until a favorable time has arrived for marketing them. Thus it is that engrossing and "profiteering" are possible during a period of inflation. During a period of deflation banks are not so ready to extend credit, and often the business man finds that he is not able to obtain the credit necessary for him to hold over goods until a favorable marketing time has been reached. He may even find it necessary to liquidate at a very unfavorable time. Further, in periods of inflation, the prices of manufactured goods often rise faster than the prices that the manufacturer finds it necessary to pay for his factors of production. "Profiteering", then, is usually a concomitant of a period of inflation. To prosecute the "profiteer" is to attempt to get rid of the cause of a situation of high price by tampering with the effect. The cause is inflation, and it is this fact that should receive the attention of those anxious to bring about a reduction in price. The word "profiteer" is foreign to periods of deflation and low price.

From the above comments it can be seen readily that there is a very close connection between the state of business enterprise and some of the monetary and banking factors.

The graphs of the four rates of interest exhibit no secular trend. The

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\*For a complete exposition of the quantity theory of money see: Fisher, Irving, The Purchasing Power of Money.



graph of the average rate of interest on ten American railway bonds, though it has no clearly defined secular trend, is "bowed" downward quite symmetrically. That is to say, the investment rate of interest declined gradually from 1890 to about 1902, after which period it rose gradually to 1918. Both the decline and the subsequent rise take the form of curves. The other rates of interest, call loans, sixty to ninety day paper, and four to six months paper, exhibit many other movements, but no secular trend. This fact may indicate one of several things: the productiveness of business enterprise has remained stationary, and consequently, the returns to the various factors of production has remained unchanged; business enterprise may have decreased in productiveness and the supply of loanable capital decreased at the same rate; or finally, business enterprise has increased in productiveness, and the supply of loanable funds has likewise increased. The truth of the matter is believed to lie with the latter case. There is ample reason to believe that business enterprise has increased in productiveness. In the first place, this fact is manifest from the increasing secular trend of the earnings and dividends group of factors. In the second place, the rewards paid to other factors, such as rent and wages, have increased. If, therefore, business enterprise has increased in productivity, and the interest rates have remained relatively the same over a long period of time, we must conclude that the supply of loanable capital funds has undergone an increase. This fact has been used by the socialists for some time. They say that the increasing supply of capital has given rise to the nationalistic and imperialistic movements in history. New colonies are exploited, they say, in order that the demand for loanable funds may, in some measure, be made to keep pace with the increasing supply. The "national impulse", therefore, is economic in its origin, according to the socialists\*. In

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\*The tendency to interpret history in this manner has been in vogue since the time of Karl Marx. It has been called "the economic interpretation of history". Cf. Marx, Karl, Das Kapital.





this investigation, we are not interested primarily in an interpretation of historical events unless they have some very definite bearing upon the matter in hand. Attention is called to this point to illustrate just what use has been made of this type of economic phenomena by those people who are interested in the change of the economic structure of the world.

#### The Major Cycles:

The major cycle is not apparent in any of the graphs of interest rates. The movements of the investment rate, mentioned in a previous paragraph are cyclical in character. That is, the rate moves downward over a period of years and then again turns upward. This is a cyclical movement of long duration, but it is not analagous to the major cycle referred to in chapter II. The major cycle is present in the movements of the total quantity of money in circulation or bank reserves, but it is not so apparent as it is for other indices. At certain periods, the movements of the index of bank reserves is above that of the line of the total amount of money in circulation. During the period 1890 to 1897, the movements of the bank reserves are usually below the line of the movements of total quantity of money in circulation. During the period 1897 to 1914, the opposite is true. The major cycle is apparent in the movements of bank loans and bank deposits. These two lines appear to move in three "steps". The first step can be noticed to begin in 1890 and end in November, 1896. The second begins in December, 1896, and ends in November, 1903. The third begins in November, 1903, and ends in 1914. The characteristic of these three movements is the fact that each new step appears to begin its upward movement with a greater intensity, and to slack off gradually towards the end. The movement can be called cyclical, however.

The monetary and banking group of indices does not so clearly exhibit the major cycle that the indices of the prices of stocks show. This fact may mean that we must look to other sources for an explanation of the major cycle movement in the general price level of stocks. It is believed that the total quantity of



money in circulation, in the last analysis, is the ultimate determinant of all the other factors. The sequence is as follows: increasing amount of money in circulation; increasing bank reserves; lower interest rates; increasing amount of loans; increasing amount of bank deposits. Loans and bank deposits will increase up to a certain amount, that is, up to the safety point of the reserves. Then loans and deposits will not continue to increase without further increase in the quantity of money in circulation. Although this sequence might be quite clear and convincing, it does not show that there may not be a cyclical movement in any one or all of the factors. Why does not the amount of money in circulation show the major cycle? Is it a certainty that bank loans will increase if the rate of interest is lowered? The answer to this problem of the major cycle cannot be given here.

#### The Minor Cycles:-

A minor cycle, of somewhat irregular character, can be noted for all the monetary and banking factors with the exception of the total amount of money in circulation and the interest rates. The total amount of money in circulation has a fairly uniform upward secular trend, and monthly variation. This graph takes a decided dip during the fall of the year 1907, but recovers its normal trend before this year is over. This indicates that there was a decided contraction in the amount of money in circulation. It is interesting to note that this contraction took place shortly after the panic of 1907 began. This contraction cannot be said to be due to the exporting of gold, for at this time gold was being engaged for importation, and the actual importations began in September. The cause of this contraction in the amount of money in circulation may be ascribed to two reasons: the hoarding of gold in the United States Treasury and the decline in the circulation of National Bank Notes. In the summer and fall of 1914 this graph makes a small dip followed immediately by a rapid rise and subsequent decline towards the end of the year. The first dip culminates in the same month that the New





York Stock Exchange closed. The first decline was in all probability occasioned by large exports of gold to Europe which took place at this time. The subsequent rise was doubtless occasioned by the extension of the limits upon the issue of emergency currency which took place in August. The subsequent decline marks the retirement of some of this emergency currency. These two irregular movements had no visible effect upon the general price level of stocks, and are easily understood in the light of the events that transpired at the time.

Interest rates, also, exhibit no minor cycle. There are a large number of smaller movements, some of them cyclical in character, but the elements of the minor cycle are lacking in this group. It may be possible to attribute this lack to the fact that there are certain correctives of the interest rate that operate to prevent a movement of this character. The chief among these correctives may be said to lie in the nature of the demand and supply for loanable funds. Were the interest rate to persist at a low rate for a certain period of time, as it must do in some phases of the minor cycle, it would be a very propitious time for enterprisers to extend their plant and to invest a part of their replacement fund. This, of course, would tend to raise the rate of interest. Were the interest rate to persist at a relatively high rate for a certain period of time, as it must do in some phases of the minor cycle, enterprisers would not be anxious to extend their plants and to reinvest a part of the replacement fund. On the other side of the problem, a persistently low rate of interest would serve to act as a check on savings and investment and to the creation of loanable funds in the shape of credit by banks. This also would serve to raise the general rate of interest. On the other hand, a persistently high rate would serve to increase savings and the loanable funds by banks and private individuals, which would then tend to operate so as to lower the rate of return. Other correctives may be found in the international flow of capital, in the establishment of new banking institutions



and the withdrawal from business of other banking institutions, and finally, in the general movements of prices which exert an influence on the interest rates. The manner in which we ascribe the workings of these correctives will depend on just what theory of interest we accept\*. The explanation herein given rests upon an eclectic theory of interest; a combination of the Marginal Productivity Theory and Boehm-Bawerk's Exchange Theory.

Total Quantity of Money in Circulation:-

The fact that the total quantity of money in circulation exhibits no minor cycle has already been noted. We must, therefore, affirm that the minor cyclical movement of stocks has causes other than those occasioned by varying quantities of money in circulation.

Average Reserves of Banks:-

An extremely irregular minor cycle of a somewhat uncertain character can be observed for the reserves of banks. This movement is greatly disturbed by its sharply marked upward secular trend. The chief movements of this group along minor cyclical lines are as follows: January 1890 to August 1893, the general tendency was downward (the reader must use care not to let the steady upward secular trend overshadow this movement which is quite real; not only for this particular phase, but for all the others as well.) From August, 1893, to June, 1894, an upward tendency that is quite decided can be noticed. From June, 1894, to October, 1896, the phase of the minor cycle reacts downward. From October, 1896, to May, 1899, the minor cycle moves up again. This movement is followed immediately by a fall which ends in November, 1903. A rise then sets in which lasts until August, 1904. This rise is followed by a consequent depression which persists until November, 1907; the month of extreme depression of the panic of 1907. For a small period here, the minor cycles of stock prices and bank reserves seem to follow each other. The en-

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\*For a discussion of the chief theories of interest the reader is referred to Boehm-Bawerk, Eugen von, Kapital und Kapitalzins. There is an excellent English translation of this work by William Smart under the title of Capital and Interest.





swing rise lasts until July, 1909. A short period of depression follows this movement and lasts until December, 1911. The following rise culminates February, 1912. A period of depression follows this and lasts until December, 1913. This series is discontinued in the following year, due to the inauguration of the Federal Reserve System, which made further figures, homogeneous with those which preceded them, impossible to obtain.

A comparison between the minor cycles of this group and the minor cycles of the movements of stock prices reveals the fact that there is evidence of a persistent connection between these two cycles. They may frequently be found to coincide; especially is this fact noticeable around the period of the panic of 1907, but the similarity cannot be said to be entirely regular. Often the movements of this cycle for average bank reserves is quite obscure in many places; it is no clearly defined movement as is this same movement for stock prices.

Although the correspondence is not as clearly marked as was the case of earnings and dividends, it is still well defined enough to warrant the conclusion that there is some connection between the general price level of stocks and bank reserves. In periods when the general price level of stocks rises or falls, a similar movement can be noted in the case of bank reserves. Bank reserves, however, start their movements a considerable period in advance of stock prices. This period of advance varies from about three months to a year. This fact might possibly lead to the conclusion that increased banking reserves made possible an increase in the volume of business. The complete analysis of this sequence must be reserved until the analysis of the monetary and banking factors has been finished.

#### Average Loans of Banks and Average Deposits of Banks:-

These two factors follow each other so very closely that they may be considered together as far as this movement is concerned. The minor cyclical movement is quite pronounced as far as these two factors are concerned. These



movements are as follows: From January, 1890, to June, 1891, the phase of the minor cycle is down for these factors. A short rise immediately follows, lasting until June, 1892. After this date values fall again until August, 1893. The following rise lasts until August, 1895, after which date these indices decline until October, 1896. After this period a reaction upward sets in which lasts until June, 1899, when a decline sets in that ends November, 1903. The following rise persists until August, 1905, when the following phase declines until the date January, 1908, is reached. This rise ends in July, 1909. The ensuing fall lasts until October, 1910. The date August, 1912, marks the end of the subsequent rise, and the decline which follows again ends in November, 1913. The series is discontinued in the following year, because it was no longer possible to obtain a homogeneous series for these indices without undue difficulty.

This minor cycle here is more clearly marked than the minor cycle exhibited by the reserves of banks and an examination of the graphs of these three factors will show that there is a rough general correspondence between them. This is, of course, as would be expected, since it is evident that there is a clearly defined causal sequence between these factors.

It is easier to compare the movements of the minor cycle of the bank loans and the bank deposits with the movements of the minor cycle of stock prices than any other of the monetary and banking indices. This is due, primarily, to the fact that the minor cycle is more clearly marked and is more persistent than in the case with bank reserves. During many of the movements of the minor cycle for these two indices, a correspondence can be noted, but there are some periods during which time there is no correspondence and correlation. Also rises and declines, when a correspondence can be noted, do not always begin and end at the same time. All that can be affirmed is a rough general correspondence during most periods. In spite of these minor differences, and lack of correspondence at certain times, there is a decided and persistent connection between these indices





and the general level of prices of stocks. An examination of the graphs will show clearly that this connection is a real and definite one.

For the most part, the minor cycles begin their movements at approximately the same time. This indicates that bank loans and bank deposits are a concomitant with the state of business enterprise. From what has already been said of the causal sequence between these various movements, it is evident an increased amount of bank reserves finds its first effect in lowering the rates of interest. This makes it an attractive thing for business enterprisers to enlarge their plants, horizontally and vertically, and to expand the volume of business that is being done. The extension and increase in credit facilities also increases the profitableness of business enterprise\*. From a point of view of economic theory credit extension may be a source of profits to business enterprisers\*\*. Consequently, we would expect to find a higher general level of prices during a period of credit expansion than we would during a period of normal equilibrium. Business enterprisers, to continue the sequence, find it attractive to take advantage of the lowered rate of interest to extend their plants; their profits are increased; and we find business enterprise carried on a higher rate of profits for the time. The general price level of stocks senses this condition nicely and we have a higher general level of prices of stocks as a direct result of increased bank reserves working through a lowered rate of interest, and an increased amount of bank loans and deposits.

This brings us back to the question of increased bank reserves. The source of this increase must be considered before the sequence is complete. It

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\*Mitchell, W. C., A History of the Greenbacks. Fisher, Irving, The Purchasing Power of Money.

\*\*This statement is especially clear if the marginal productivity theory of distribution is considered. An extension of credit facilities, lowering of the rate of interest, and the accompanying changes in the economic fabric, are disturbances to the normal equilibrium, which may be a source of profits. Seager, in his Principles of Economics, illustrates this fact quite clearly. However, increasing credit facilities are a possible source of business profits from practically all



has already been pointed out in this chapter that an increased volume of money will be accompanied by an increased amount of money available for bank reserves. A part of this increased purchasing power is in the form of legal tender and eventually finds its way into the vaults of the banks. This has clearly been the case during the period at issue as a glance at the graphs will reveal. One of the important proximate occasions of a higher general price level of stocks, which means a putative higher level of business profits and enterprise, is the increase in the total amount of money in circulation.

Economists have long adhered to this belief, partly from a priori and partly from inductive reasoning. This fact is here firmly established both statistically and graphically. There is one point, however, in this connection which is not quite clear. Does the increasing quantity of money and the consequent expansion in credit cause the prices of stocks to be quoted in larger terms due to the decreased purchasing power of money, or does the increasing quantity of money, and the consequent increasing supply of bank credit enable business enterprise to become more profitable and in this manner enhance the capital value of the shares? This problem can be stated differently by asking whether the increased value of shares is merely the reciprocal of a decreased dollar or whether it is a result of increased earnings. Does increasing the quantity of money operate to increase the value of shares directly or through the medium of earnings? For a final answer to this problem, a great deal more must be done in the way of analysis before the final answer can be given. The other factors must first be compared with the general price level of stocks before a final solution is attempted. There is this much, however, in favor of saying that the increased quantity of money raises the value of shares by making business enterprise more profitable; that is the

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the different distributive theories which have current acceptance to-day.





fact of the cyclical movements of the value of shares, and the absence of any such cyclical movement in the total quantity of money in circulation. Although the quantity of money exhibits no minor cycle, the bank loans and deposits do. This might serve to show that the quantity theory of money was operating through this medium to cause the values of shares to be quoted in larger terms, or in terms of a depreciated purchasing medium. The swings of the minor cycles in stocks, and those of the bank loans and deposits do not serve to bear out this contention. The recessions from periods of high prices of stocks, while often accompanied by recessions in the quantity of credit, bear but a small quantitative relation to these recessions in credit. The weight of the evidence, as an examination of the graphs will reveal, serves to bear out the thesis that the minor cyclical swing in prices of stocks is caused by the greater earning ability of business enterprise during periods of credit inflation. This conclusion cannot as yet be stated with any definiteness until more work of analysis has been completed, but it is quite evident that this theory is close to the truth from the analysis already made.

In connection with the minor cycle attention must be finally drawn to the interest rates again. The fact that the interest rates show no cyclical trend corresponding to the minor cycle has already been noted. This fact does not serve to destroy the sequence that has been drawn; namely, from increased bank reserves through decreased interest rates, then through increased bank loans and deposits to finally a more profitable state of business enterprise and a consequent higher evaluation of the shares in business enterprise. Interest rates do not operate in cyclical swings as do the other factors because they are not absolute amounts as these other factors are, but relative amounts. They are percentages, and as such, serve as media through which these other factors can operate. This fact of the absence of the cyclical swings is further explained by the



very small movements which interest rates make. The movement is really too small to show on a graph of this scale the minor cycle. A careful examination of the rate of interest for call loans at the stock exchange will show that the rates are very generally low when the bank reserves are high and loans are expanding, but that towards the end of the cycle of loan expansion, the rate of interest begins to move at a geometrically increasing ratio. As the banks approach the period when they become "loaned up", the interest rate will advance rapidly. The opposite effect is noted when bank loans are contracting. A low rate, therefore, will persist as long as banks are desirous of expanding their loans, and as soon as this period of expansion approaches its end the rate begins to move upward rapidly. A high rate will persist as long as bankers do not feel that further expansion is either wise or profitable. This fact may be as has already been indicated or it may lie in certain psychological factors that do not make themselves quite evident. Perhaps the interest rates are further complicated by forces which are not here indicated. However, their movements may be observed to bear out the conclusion of a connection between the cyclical swings of the prices of stocks and of the monetary and banking factors. The fact that the swings are not of the same cyclical character does not warrant us in throwing out this conclusion altogether, for the swings are of such a nature as to affirm this general conclusion. An ~~ex~~amination in some detail of these two indices will serve to bear out these contentions.

#### Movements of Shorter Duration than the Minor Cycle:-

The movements of a shorter duration than the minor cycle, which both the index numbers of the prices of stocks and the monetary and banking factors make, are of two kinds: a seasonal variation and a month to month variation. The seasonal variation is cyclical in character. This cyclical character of the seasonal variation is more clearly marked in the case of the monetary and banking factors than it is in the case of the indices of stock prices. The name "season-





al cycle" will be applied to it.

The Seasonal Cycle:-

The seasonal cycle in the case of the monetary and banking factors is a movement, quite persistent, that takes place in the fall of the year, especially during the months <sup>from</sup> of July to January inclusive. This is the period usually described in the current financial journals as the "crop moving period", or harvest season. During the early months of this period, July through November, bank reserves, loans, and deposits decline quite rapidly, and interest rates undergo a marked and rapid rise. During the month of December, a decided reaction can be noticed in declining interest rates, increasing bank reserves, loans and deposits. These changes are due to the fact that the country banks are withdrawing their balances from out of the New York City Banks to assist the farmers of the West and Middle West in harvesting and moving their crops. This withdrawal of funds acts in the first place to deplete the reserves of the New York City banks. This is, of course, followed by the usual rising interest rates and decreased loans and deposits. Towards the end of November and December, the farmers are being paid for the crops which have now been harvested, moved, and sold. The farmer's balances in the country banks are increasing <sup>and</sup> the country banks consequently increase their deposits in the New York City Banks. This operates to increase the reserves of the New York City Banks and the interest rates decline, and loans and discounts increase. This description does not fit the entire period compassed by this study, but more particularly the period up to the year 1915. Data is lacking for bank loans, reserves, and deposits after this period, but the interest rates show clearly that the marked seasonal variation is absent from this year on. This is largely due to the changes wrought by the Federal Reserve System.

The index numbers of the prices of stocks show this movement also, but not so regularly nor as clearly as the monetary and banking factors do. The fact that the general price level of stocks shows the same type of a seasonal varia-



tion as does the monetary and banking factors indicates that there may be some kind of a causal relation between these two groups. We have already seen the forces at work leading to the seasonal variation in the case of the monetary and banking factors. Traders in stocks are not able to secure the credit necessary to carry their shares, and they are often forced to liquidate them, when bank reserves are low and the lending facilities of the banks are being taxed. Thus it is that the seasonal variation or cycles in the monetary and banking factors are the immediate occasion of the seasonal cycles in the case of the indices of the prices of stocks. During the fall of the year, for the majority of the years up to 1915, a decline can be noted in the prices of both the railroad and the other stocks. This decline usually begins at a slightly later time than the decline in the monetary and banking factors. Often it is not manifested by an actual decline, but in a slackening in an otherwise rapid rise in the prices of stocks.

The fact that this seasonal cycle is not as regular in the prices of stocks as for the monetary and banking factors indicates that there are often stronger forces operating on the general price level of stocks than the monetary and banking factors, or that the force of monetary and credit stringency is not powerful enough to cause an appreciable general reaction in the prices of stocks. The absence of this correlation during any particular years does not operate to destroy the fact of a causal relation between these two groups. There is the seasonal variation in the prices of both groups of stocks in all but the following years: 1900, 1908, 1909. After 1915 the phenomena of the seasonal variation is absent for both groups of factors.

The causal sequence between the seasonal cycles in the case of the prices of stocks and the monetary and banking factors is as follows: Country banks withdraw funds from their New York City correspondents for the purpose of harvesting, and moving the crops. This causes a decline in the New York City





Bank's reserves, which is followed by a rise in the rate of interest. Stock traders are not able to obtain funds as easily as formerly, or they cannot get the funds or credit to carry certain operations through and are forced to liquidate their holdings. Potential purchasers are discouraged from buying, and the demand side of the market is weakened. This causes a drop in prices of stocks generally. After the crops have been moved and sold, the country banks begin to increase their deposits in the New York City Banks, and the interest rate falls. This aids the demand side of the market for stocks, and is reflected by a general recovery in the prices of stocks. Thus it is that the monetary and banking factors exercise a very powerful effect upon the prices of stocks. They are not the final or the ultimate cause, they may not even be the cause, but they are one step in a long causal sequence and it is through them that the underlying causes work. The change in the banking system that began to work itself out in 1915, did away with this seasonal variation for both groups of phenomena very largely. This further substantiates the fact that the monetary and banking factors are an essential link in this causal chain.

#### Month to Month Variation:-

A very careful examination of the graphs of the monetary and banking factors and the indices of the general price level of stocks shows that there is no regular relation between the two. Now it may be often possible that a monthly rise or decline in the general price level of stocks may be due to some factors that have altered monetary and banking conditions so as to assist in bringing this about, but we search in vain for any persistent connection that will give us a general rule like those which we will be able to formulate for the other movements. While we may not be able to say that there is no causal sequence between these two groups of phenomena, with relation to the month to month variation, we can say that the evidence as revealed by the graphs is against any such assumption, and for this reason the assumption of causal sequence for this movement will not



be made.

The next step, and the final one, in this connection, is to bring these stray correlations together in a series of general conclusions which seem to be warranted by the facts.

Conclusions:-

1. That the movements known as secular trend, major cycle, minor cycle, and seasonal cycle are not peculiar to the general price level of stocks alone, but find their counterpart also in the monetary and banking factors. The close similarity between these two groups in respect to these movements indicates that there may be some causal relation between the groups.

2. That this causal relation is believed to come about in three ways:

(a) Through the operation of the quantitative law (quantity theory of money). An increasing amount of money and credit reduces the purchasing power of money and credit. The prices of stocks, since they are measured by a diminished unit, are quoted then in a larger number of units of purchasing power, and thus the general price level of stocks is raised. A decreasing quantity of money and credit would be followed by a decreasing general price level of stocks.

(b) Through the fact that a changing quantity of money alters the profit making possibilities of business enterprise. An increasing quantity of money disturbs the normal equilibrium of production by the fact that the prices of some goods to rise faster than others; by the fact that the prices of finished goods are usually higher than the prices paid for the production goods (they are sold at a later date, and the price level will have risen during this period); and, finally, by the fact that enterprisers are able to take advantage of these price differentials to increase their profits. A decreasing quantity of money will be accompanied by an opposite series of effects.

(c) Through the fact that an increasing or decreasing supply of loanable bank funds increases or decreases the ability of traders on the stock exchange to





hold or to purchase stock. Changes in the supply of credit in this manner affect both the supply and the demand side of the market for securities. An increasing supply of available funds will strengthen both the supply side and the demand side of the market by making it easier for owners of stock to hold their shares and thus strengthening or raising the level of the supply, and also by furnishing prospective purchasers with the means to carry their plans into effect and thus strengthening, or raising the level of the demand side of the market. Increasing funds in this manner also enables "short" traders to work more effectively and thus has a tendency to raise the general level of the prices of stocks all around. Decreasing the supply of loanable bank funds has just the opposite effect to that already noted.

3. That the increasing secular trend of the general price level of stocks is believed to be due primarily to the operation of the quantitative law, and secondarily to the fact that an increasing quantity of money has enabled business enterprise to become more profitable. The increasing secular trend of the earnings and dividends factors is believed to be due to the same influences in the order named.

4. That the major cycles cannot be accounted for with the same precision which it is possible to employ in the case of the other movements, since they are not so clearly marked on the monetary and banking factors. They are, however, believed to be induced by the operation of the quantitative law and the fact that the increasing quantity of money and credit has made business enterprise more profitable. It cannot be urged in this connection that one factor is any more potent than the other. The movement is a cyclical one because it is of the nature of changes of this sort to work out in a somewhat irregular fashion. That is to say, rises in prices, whether they be due to one cause or to another, overreach themselves, and are compelled to drop back. This is sufficient to cause a movement of the character of the major cycle.



5. That the minor cycle is quite apparent in both groups of factors and is believed to be due primarily to the fact that an increasing quantity of money and credit has made business enterprise more profitable, and secondarily through the operation of the quantitative law. The movement is a cyclical one, perhaps, because the cyclical movement can be noticed for the bank reserves, loans and deposits, and it may be that these factors that give the general price level of stocks its characteristic movement. The movement is cyclical for the monetary and banking factors because of the nature of the lending process of banks, because it is the constant tendency of economic phenomena to recoil after a rise or fall; because, finally, economic phenomena of this sort appears to work in a cyclical fashion as do many other facts of life. A full explanation of the phenomena of these cyclical movements of a relatively long duration cannot be given at this point; suffice it to say that this movement is characteristic of the monetary and banking factors, and is carried over by them into the general price level of stocks.

6. That the seasonal cycle, as has already been noted, is clearly apparent in both the indices of the prices of stocks and the monetary and banking group of factors. The seasonal cycle is believed to be primarily due to the fact that a changing available supply of bank funds reacts upon the general price level of stocks by affecting the demand and the supply sides of the stock exchange market and thus causing prices to advance generally, or to decline as has been previously shown. Secondarily, the seasonal cycle is believed to be due to the fact that the contraction and expansion of credit in the fall and the winter of the year, causes business enterprise to become less and finally more profitable concomitantly with this contraction and expansion of credit. The primary cause is believed to be the more important of the two. This movement is a cyclical one from the nature of the phenomena that cause the seasonal movement; namely, the harvesting, moving, and selling of the grain in the West and Middle West. This





has already been outlined in the previous pages of this chapter.

7. That the month to month variations have no relation between the monetary and banking factors and the general price level of stocks, and consequently, no rules for correlation can be given here.

8. That the influence of the monetary and banking factors would produce the secular trend, major, minor, and seasonal cyclical variation in the general price level of stocks in the absence of all other forces.

9. That the monetary and banking factors are not the sole force acting upon the general price level of stocks, and that often the influence of this group of factors is quite nullified by the action of other forces.

10. That usually the causal sequence proceeds from the monetary and banking factors to the general price level of stocks. It is freely admitted that the influence between these two groups may often be reciprocal, and that many changes in the monetary and banking factors have been occasioned by changes in the general price level of stocks, but a careful examination of the graphs and a consideration of the way in which business enterprise uses bank credit seems to lead to the <sup>former</sup> ~~latter~~ conclusion. This is especially clear in the light of the analysis found on the first few pages of this chapter.



CHAPTER V. THE GENERAL PRICE LEVEL OF STOCKS AND INDICES  
OF THE CONDITION OF BUSINESS ENTERPRISE

In this chapter, the indices of the prices of stocks are to be compared and correlated with certain indices which show the condition of business enterprise. The data for these indices <sup>have</sup> ~~has~~ been plotted in graphical form upon two charts which will be found appended to this study. The data <sup>were</sup> ~~was~~ plotted upon two charts for purposes of convenience only, so that each graph would stand out clearly. The two charts are labelled "Business Enterprise Group, Part One", and "Business Enterprise Group, Part Two". Data for the following indices of business condition <sup>have</sup> ~~has~~ been plotted upon the respective charts:-

Business Enterprise Group, Part 1

Bank Clearings in New York City  
Bank Clearings Outside New York City

Listing of Stocks on the New York Stock Exchange  
Listing of Bonds on the New York Stock Exchange

Unfilled orders, United States Steel Corporation

Business Enterprise Group, Part 2

Business Failures

Anthracite Coal Shipments

New Incorporations

Building Permits Issued (total value)

Pig Iron Tonnage

A description of the nature and source of this data will be found in Appendix A.

Bank Clearing in and out of New York City and the General Price Level of Stocks:

The movements of the indices showing the bank clearings in New York City and the movement of the graph showing bank clearings outside of New York City follow each other very closely with the bank clearings in New York City at a uniformly higher level throughout, and showing a wider variation. Both series will be





considered simultaneously with the index numbers of stock prices.

Comparison between these two groups of phenomena reveals the fact that the movements of the general price level of stocks and bank clearings are very closely related in all the movements, with the possible exception of the month to month variation. Another point in this connection is the fact that the movements of the indices of the prices of stocks begin at a period of from one to three months in advance of the same movements in the case of bank clearings. The seasonal cycle for bank clearings is different in character from the seasonal cycle for the general price level of stocks. At the point where stocks usually decline, the bank clearings rise, and where the prices of stocks work back to normal, the bank clearings decline.

These movements in the quantity of bank clearings may indicate several things. In the first place, they may represent an increased use of the instruments of bank credit that are handled through the clearing house associations. In the second place, they may be merely the result of the operation of the quantitative law; that is to say, the same amount of business transactions were being cleared, but that they were now measured by a smaller unit. In other words, the general price level of commodities had risen. In the third place, they may indicate that business enterprise has become more active, not necessarily more profitable, but that there was an increasing volume of business being done. As a matter of fact these movements, the cycles and the secular trend, are in all probability a result of a combination of the causes mentioned above. There is sufficient reason to justify the statement that bank clearings are a fairly satisfactory index of the activity of business.

Returning now to the fact of the correlation between the general price level of stocks and bank clearings it can be noticed that the movements of the general price level of stocks have a counterpart in the activity of business enterprise. The general price level of stocks, then, is again affirmed as a more



or less satisfactory index of the condition of business enterprise. Not as an index of the state of business enterprise at any particular moment, but as a prophetic index of the way that business enterprise will be at some time in the future. It again affirms that the cyclical movements, and the secular trend, are not peculiar to the general price level of stocks, earnings and dividends, and monetary and banking indices, but also to certain indices which indicate the activity of business enterprise.

It is not believed that the increasing activity of business enterprise, or at any rate the increasing volume of bank clearings, causes these movements in the general price level of stocks, nor that they are any link at all in the chain of causal sequence. The major or minor cycles of the general price level of stocks is not caused by these movements in the case of the bank clearings, but they are accompanied by them. Before any further steps in the causal sequence can be affirmed, much more in the way of analysis and study must be done.

Nothing more of importance can be ascribed to this phenomena in the case of bank clearings at this point. Their general agreement with the movements of the general price level of stocks serves more to affirm that these movements are genuine for business enterprise. It is also of interest to observe what takes place in the field of business activity when the general price level of stocks changes. Other than their use as corroborative evidence, they have little value. Bank clearings are a quantitative rather than a qualitative index of the state of business enterprise. They indicate rather that business is active or inactive, that the trade turnover is heavy or light, but do not show business enterprise as good or bad, that is, as profitable or unprofitable.

Listings of Stocks and Bonds on the New York Stock Exchange and the General Price Level of Stocks:

The data for the listings of bonds and stocks on the New York Stock Exchange is annual and, consequently, the seasonal cycles and month to month var-





iation cannot be compared. The movements of these two indices follow each other very closely in most respects. The listings of stocks show a much wider variation and dispersion than does the listings of bonds, but this is as would naturally be expected from the nature of these factors. Movements of these two factors are indicative of two things; in the first place, they indicate the number of new corporations that are being formed, of a size and character to make it advantageous for their securities to be listed upon the exchange; in the second place, they show the growth in size and character of the existing corporations which make it advantageous to list their securities. They are rough, general, indices of the condition of business enterprise as being good or bad. Increasing listings will generally mean that business enterprise is becoming better, and decreasing listings will ordinarily indicate the opposite state of affairs. As an index, they differ from bank clearings in that bank clearings are more or less representative of the activity of business, while listings are more or less representative of the state or condition of business as being good or bad. Bank clearings are a quantitative index, and listings are a qualitative index.

In spite of the very violent fluctuations which the listings make, a rising secular trend, major cycles and minor cycles can be distinguished, and a very rough general correspondence can be made with the general price level of stocks. Again, these movements may have been affected by the quantitative law, that is to say, the quantity of money and credit may have had some effect in these movements, more particularly the rising secular trend. The fluctuation that these listings make are of too violent a character, and bear too small a relation to the graph of the total quantity of money in circulation to assign this as a cause however. This wide dispersion and violence also serves to discredit the assignment of the increasing use of the corporate form of business enterprise as the sole reason for these movements. While this has not been without its importance, the growth is not of the even character that one would expect to find from a sole



cause such as this. It can be assumed, then, that business enterprise has gradually increased in profitableness, and that the condition of business enterprise has moved in cycles of the kind noted, at the same time that its condition was becoming better.

The fact of the correspondence between the movements of the general price level of stocks with the movements of the listings of stocks and bonds serves to bear out the contention that the general price level of stocks is a fairly good index of the quality or state of business enterprise. It shows that business enterprise is at the basis of the values of stocks. The correspondence merely serves to affirm the fact that the general price level of stocks reflects the condition of business enterprise, and, probably, is to a large extent governed by it.

We pass now to a consideration of the unfilled orders of the United States Steel Corporation and pig iron tonnage. These <sup>indices</sup>~~factors~~ will be considered at the same time due to their similarity in character, and due to the fact that they are both indices of slightly different phases of the same thing.

Unfilled Orders of the United States Steel Corporation, Pig Iron Tonnage, and the General Price Level of Stocks:

Pig iron is the basis of a great many manufacturing processes and statistics indicating the amount of pig iron that is being used are of interest in showing the activity of business enterprise with especial reference to manufacturing, building, and railroad development. The unfilled orders of the United States Steel Corporation are reported in dollars. An increase in these figures indicates a new and larger demand for raw iron and steel. It indicates an immediate increase in the demand for which the plants of the Steel Corporation have not yet had time to make a proper adjustment, and hence the orders must be carried for some time as unfilled. The pig iron tonnage is quoted in tons, and hence is unaffected by changes in the purchasing power of the dollar. This ser-





ies indicates the present state of iron production. The unfilled orders shows the effect of an immediate increase in building, manufacturing, and railroad development, and is also affected by the purchasing power of the dollar. This series is the most sensitive of the two. The pig iron tonnage shows changes in building, manufacturing, and railroad development after they have had time to work themselves out in the production of the pig iron plants. It shows changes after they have been in effect for some time, and is not as sensitive to immediate increases in the demand as is the unfilled tonnage.

Neither one of these will be able to indicate with any certainty the profitableness of business enterprise, but they will rather indicate the activity of manufacturing enterprise. Of course, an increasing activity of business enterprise with reference to manufacturing, as indicated by these iron and steel statistics, will usually mean that enterprise is becoming more profitable, and hence is expanding its activity. This series of iron and steel statistics, like the preceding business enterprise indices, is no step in the causal sequence underlying business activity. They will serve more to confirm the accuracy of the indices of the prices of stocks as representative of business conditions. With these facts in mind we can now proceed to the task of comparing the fluctuations that these indices make with those of the indices of the general price level of stocks.

The fluctuations that both of these iron indices make follow very closely the fluctuations made by the index numbers of the general price level of stocks. The movements that they make lag from three to nine months behind the movements made by the index of stock prices. This serves to confirm again the fact that the prices of stocks are a more or less anticipatory index of the condition of business enterprise. The fact that the pig iron tonnage shows the movements, especially the secular trend, indicates that it is not the quantitative law alone that accounts for the movements. Seasonal variation is not pres-



ent in either of the iron series, but this fact in no way destroys the value of the indices as showing the state of business activity.

The unfilled orders of the Steel Corporation is the more sensitive index of the two, and a glance at these two graphs shows the greater delicacy with which this index registers changes. It also registers changes several months in advance of the pig iron series.

It is, therefore, in order to conclude that the general price level of stocks registers in advance with some degree of accuracy, the state of activity of building, manufacturing, and railroad development.

#### Business Failures and the General Price Level of Stocks:

Business failures afford a qualitative index of the condition of business enterprise. They show business enterprise as relatively good or bad; as profitable or unprofitable, but show nothing of the amount of business that is being transacted.

A comparison of the index of business failures with that of the general price level of stocks shows that there is a very close correlation between the two, although the fluctuations of the business failures are not nearly so wide as are those of the prices of stocks. In this case, also, we can notice the fact that the movements of the general price level of stocks anticipate those of the business failures by a period of about three months. All the movements that the general level of stocks make have their counterpart in the movements of the business failures. The secular trend, major and minor cycles, seasonal cycle, and month to month variation are all present. When business failures increase in number and amount, the prices of stocks fall, and when business failures decrease, the prices of stocks increase. The correlation is thus of an opposite character to that of most of the other indices, and the movements are not nearly so pronounced. The correlation is sufficiently strong and distinct, however, to warrant us in saying that the prices of stocks are an accurate index of the





condition of business enterprise in the light of business failures. More than this we cannot affirm, but this much is clear.

There is one point in connection with the business failures that seems peculiar and which does not find a counterpart in the movements of the general price level of stocks. That is the fact that the business failures increase in the month of January for almost every year and decline the following February. This movement is quite sharply defined. Sometimes the prices of stocks will be found to decline at the same time, but the correlation is not a persistent one by any means. This may be explained by the fact that the general price level of stocks anticipates the condition of business enterprise, and that this increase in business failures at this time has already been discounted by the October-November seasonal decline in the prices of stocks. This movement in business failures has persisted for some time, and it is quite likely that the movement is anticipated by the stock prices some months before. It is not an easy matter to explain the increase in business failures at this time, but there are some facts that may be able to shed light on this phenomena.

In the first place, there very generally is a shortage of funds in the fall of each year, and business men will find it more difficult to find funds for working capital in the fall than they would at any other time. This inability to obtain the necessary working capital some months past may show in the quota of failures at this time. Then January is the month for closing up the books, and during this time many business men seek to collect their over-due accounts. This, of course, is bound to precipitate many failures. Many business men at this time decide to go into voluntary bankruptcy, because the financial statements tell the story of impending failure.

In the main it can be concluded that the general price level of stocks is a satisfactory index of the state of business enterprise from the qualitative point of view of business failures. The correlation between the two graphs is



quite clear and, with the single exception noted, is complete.

Anthracite Coal Shipments:

The shipments of anthracite coal in the East, in a limited way, denotes the activity of business enterprise from the point of view of the extractive, railroad, and manufacturing industries. It is a quantitative index, and shows enterprise as expanding or contracting in these fields. It is not a very delicate index when compared to other indices, but it affords at least a good guess. This index is measured in terms of tons rather than in terms of dollars and so it will not show the influence of the quantitative law. It has a very great month to month variation, and the dispersion is relatively high.

The correlation between the movements of this index and the movements of the general price level of stocks is quite clear. The cyclical movements and the secular trend are present, but they lag behind these movements for the prices of stocks. There is very little relation between the seasonal cycle and also the month to month variation in the case of anthracite coal shipments and the prices of stocks. There are some movements also peculiar to the shipments of anthracite coal which cannot be observed for the prices of stocks.

The shipments of anthracite coal gradually increase during the first few months of the year and reach a high point approximately in the month of May. They then decline during the next two or three months, and then rise to another high point about in October and decline again until about February of the following year, when they again rise. This movement is not exact for all the years under consideration, but there are very generally two distinct rises and declines approximating in time the periods mentioned for each year. There is no explanation offered for this movement. It does not find its counterpart in the movements of the general price level of stocks. Were it not for the character of this movement it might be possible to ascribe the seasonal movement to the shipments of anthracite, but this cannot be done with accuracy on this account. The monthly





variation is so very high that but little confidence can be placed in this index.

In general, however, the longer movements of the prices of stocks are shown by the shipments of anthracite, and this serves further to corroborate the judgment that the prices of stocks are a good index of the condition of business enterprise from the quantitative point of view.

#### New Incorporations:

New incorporations in the eastern states involving a million dollars or more are both a qualitative and a quantitative index of the condition of business enterprise. When business is good, that is, profitable, new enterprises are created and we find many new incorporations. When business is active, that is, when trade is turning over rapidly, we are also apt to find new incorporations. Thus new incorporations, in some measure, indicate both phases of business enterprise. Since this series is measured in terms of dollars it is subject also to the action of the quantitative law, both in its relation to money and also to credit.

Only in the most general terms can it be inferred that there is a correlation between the general price level of stocks and the new incorporations. The month to month variation is so very great in the case of the new incorporations that it is not possible to distinguish the secular trend and the cyclical movements. It can be said, however, that when stocks begin to rise an increase in the new incorporations can be noticed, and these incorporations appear to fall off when prices of stocks decline. The seasonal variation for the new incorporations differs essentially from the seasonal variation for the prices of stocks. New incorporations appear to increase during the middle of the year and then decline only to increase towards the last two months and again decline. This is the most persistent movement that this series can be observed to make. Although the cyclical movements cannot be correlated here, there is the general similarity of movement that has been noted. It can thus be affirmed that from



the point of view of new incorporations the general price level of stocks reflects this phase of enterprise.

We might expect that a great many new incorporations would operate to depress the prices of stocks by reason of the listing of so many new securities on the exchange. This fact is not indicated on the indices of stock prices, however, and so it must be rejected. When the new listings of stocks were compared with the prices of stocks, it was observed that increased listings were accompanied by higher prices for stocks. Another series, the stock exchange trading group, discussed in chapter IX will shed further light upon this problem.

#### Building Permits Issued:

The building permits issued are recorded in terms of dollars, and so may be expected to show the effects of the quantitative law. This index, like new incorporations, is both qualitative and quantitative in its nature. Building permits on the increase indicate an increased activity and turnover of business and at the same time tend to show that business enterprise is becoming more profitable and is consequently expanding. This index is in many respects similar to the new incorporations, but it may indicate an expansion of plants already existing rather than the creation of new corporations.

The correlation between the number of building permits issued and the prices of stocks is an extremely close one in all respects. The secular trend, the major, minor, and seasonal cycles are present in the building permits. A distinct lag can be noted in the building permits of about six months in duration.

The value of building permits can be observed to increase during the first five or six months of the year and then to fall off during the remainder of the year. This movement does not find its precise counterpart in the movements of the general price level of stocks and is due, doubtless, to conditions prevailing in the building trades. This is the only exception to the general correlation existing between these two groups, which is far more clearly defined than





it was between stock prices and new incorporations.

A general conclusion, that stock prices are a good index of the state of business enterprise as reflected by the amount and value of new building, can, therefore, be made.

So much for the general correlation between the prices of stocks and the various factors indicating the activity of business enterprise. The next task is that of drawing such conclusions as the correlations seem to hold.

Conclusions:

1. That there is a very close similarity between the movements of the general price level of stocks and the indices showing the activity of business enterprise group, and that the general price level of stocks reflects the quality of business enterprise as good or bad, profitable or not profitable, as well as the actual turnover of trade.

2. The reasons indicated by the graphs for this close correlation are:

(a) The action of the quantitative law with reference to money and to credit.

(b) that stocks are high or low in price due to the condition of business enterprise which they anticipate, and that this fundamental condition of business is indicated both by the prices of stocks, which anticipate this movement, as well as the various graphs grouped under the heading of business enterprise factors.

3. That there is no causal sequence between the business enterprise <sup>indices</sup> ~~factors~~ and the general price level of stocks.

4. Finally, that the general price level of stocks is an accurate anticipatory index of the state of business enterprise from the point of view of listings of bonds and stocks on the New York Stock Exchange; unfilled orders of the United States Steel Corporation; tonnage of pig iron; bank clearings in and out of New York City; business failures; shipments of anthracite coal; new incorporations; and building permits issued.



CHAPTER VI. RELATIONS EXISTING BETWEEN THE GENERAL PRICE LEVEL  
OF STOCKS AND THE FOREIGN TRADE GROUP.

The foreign trade group is composed of the following indices:

1. Average monthly rate of sterling exchange
2. Monthly exports of the United States
3. Monthly imports of the United States

The chart with these indices plotted upon it will be found appended to this study.

A discussion of the nature and source of the data will be found in Appendix A.

These indices representing the foreign trade of the United States afford some knowledge of the state of business enterprise, but in a different manner from those factors considered under the business enterprise group. This group of factors shows the actual activity and volume of trade which business enterprise in the United States is carrying on with the several foreign nations. The foreign trade factors indicate business enterprise from the point of view of trade, its activity. In other words this group is a quantitative index of business enterprise from the point of view of foreign business. Foreign trade differs in some important points from domestic trade and in some respects may be said to be independent of it. Business at home may be progressing well, and the state of business enterprise may be quite active and prosperous, while the foreign trade is quite inactive. However, an increasing or a decreasing activity in the field of foreign trade is not without its significance for the state of business enterprise, for if foreign trade is observed to increase or to fall off, it is quite possible that similar changes are taking place in the state of business enterprise. For these reasons, it was felt to be advisable to make a separate comparison between the foreign trade group and the general price level of stocks.

Secular trend is found in both the exports and the imports, but, of course, is not found in the monthly average rate of sterling exchange. The major





and the minor cycles are not found in any of the factors. It is evidently not the nature of these factors to move in cycles of this duration. We would ordinarily not expect to find these cycles in the case of the average rate of sterling exchange, but from what has been seen of other indices, we might expect to find these movements in the <sup>other</sup> foreign trade <sup>indices</sup> ~~factors~~. The reason for the failure of merchandise exports and imports to reflect the larger cyclical movements probably lies in the fact that these factors are concerned with the trade of more than the United States alone; they are concerned with the trade of the United States and many other foreign nations. In this way the cyclical tendencies of our own business enterprise may be lost. Foreign business may be moving in a way quite different from the way in which the domestic business is moving, and the movements of our own business may be lost in these movements. All the various indices that we have thus far examined were concerned with domestic business, and most of them showed cycles of a similar nature. Since foreign trade is concerned with the business of several countries, it is possible that differing cyclical movements abroad might operate to destroy the movement for our own foreign trade. A positive answer to this question cannot be given unless the business cycles of these countries are studied in extensive fashion for this period; a task beyond the scope of this investigation.

A seasonal cycle is present in the exports of the United States and also in the average monthly rate of sterling exchange. The imports do not show the seasonal cycle. This seasonal cycle is annual in character and is generally a smooth movement. The low point is usually attained in July. From this month on the exports gradually rise, attaining a high point in October or November, from which point they decline gradually until July. The seasonal cycle for sterling exchange resembles this movement in character, although it is less pronounced, and is a smoother movement. Our exports consist of a great many agricultural products, notably the cereals. A large quantity of these cereals is exported to



English ports. Beginning with the harvesting period our exports of grain increase up to October-November, and gradually decline until July. Since much of this cereal finds its way to British ports, and since much of the other financing is done through London, the rate of sterling exchange is bound to reflect this movement. Thus the seasonal cycle for exports and for the rate of sterling exchange is occasioned by the same forces that occasion this movement in some of the money and banking group; especially, bank reserves, interest rates, and loans and deposits. The imports of merchandise do not show this cycle, because our imports are very largely in the nature of manufactured goods. There is too small a proportion of agricultural produce to show the agricultural seasonal cycle.

The remaining movements are the small month to month variations and, apparently, they bear no relation to these movements in the case of stock prices. These small movements depend upon many factors which seem to be peculiar to the foreign trade group. A comparison of these small movements with other small movements for different groups is beyond the scope of this investigation.

There yet remains one movement of importance in connection with these indices; that is the fact that the secular trend of the imports is not so great as is that of the exports. In the nineties it can be observed that exports and imports are very close together in the matter of secular trend, but that gradually the secular trend of the exports becomes greater than that of the imports. This reflects the increasing "favorable balance of trade". The distance between these two graphs becomes great in the second decade of the twentieth century. For the state of business enterprise, this is important because it is indicative of the expanding activity of American business enterprise. It shows that our trade turnover is increasing, especially for our manufacturing and extractive industries. It shows, further, that the volume of domestic manufacturing is increasing and that we are depending less and less upon foreign countries for our





manufactured goods. Since both the exports and the imports are measured by the same unit, the dollar in this case, changes between the levels of imports and the levels of exports give us a more positive indication of this fact of the growth in volume and activity of our business enterprise. The prices of stocks, and the other indices herein considered, are again affirmed as accurate indices of the condition of business enterprise.

Outside of these points, to which attention has been drawn in this chapter, there is little of significance between the movements of the foreign trade group, and the prices of stocks. These relations may be briefly summarized in the following statements:

Conclusions and Summary:

1. The only correlation that can be noted between the prices of stocks and indices of foreign trade are those between the secular trend and the seasonal cycle of the two groups.

2. The lack of correlation between the other cycles may be due to the fact that business enterprise of foreign countries follows a different minor and major cycle from that followed by business enterprise in the United States, and hence these movements for our business enterprise are obliterated as far as these indices are concerned.

3. The seasonal cycles, in the case of foreign trade as was found in the case of the other indices, are occasioned by the seasonal crop period in the United States.

4. Causal connection cannot be affirmed between the prices of stocks and the foreign trade factors. The secular trend and seasonal cycle are occasioned in each group by independent causes. No quantitative or qualitative connection can be affirmed between the two groups.

5. The indices of the prices of stocks are again affirmed as reliable indices of the condition of business enterprise as shown by the foreign trade factors.



## CHAPTER VII. THE GENERAL PRICE LEVEL OF STOCKS

### AND COMMODITY PRICES.

Three graphs of commodity prices have been plotted upon one chart under the heading of "Commodity Price Group". These prices are:-

1. An index number of the prices of raw commodities
2. An index number of the prices of manufactured commodities
3. An index number of mixed commodities

This chart will be found appended to this study and a discussion of the nature and source of the data used in making this chart will be found in Appendix A.

The problem of this chapter is to attempt to correlate the movements of these commodity prices with the movements of the general price level of stocks. The movements of the three indices of commodity prices follow each other quite closely, but there are certain differences between these movements that are quite significant for purposes of this study. Each of the characteristic movements will be separately considered.

Secular trend: There is a marked upward secular trend for all three indices of commodity prices. This shows that there has been a steady change in the quantitative relations between money and credit and commodities. The secular trend could come about in no other way. J. S. Mill has pointed out that changes in the general level of prices cannot come about by changes in the demand and supply for commodities, because, in the last analysis, effective demand and supply are one and the same thing. Supply is made up from goods as is also demand. Exchange involves the trading of commodities. An increase in the total quantity of goods increases the supply, but at the same time it increases the effective demand. Demand and supply are one and the same thing at base; namely, goods. In a developed community this exchange process takes place





through the medium of money and credit. Money and credit, as the medium of exchange, are at the same time the standard and measure of value. A change in the general price level of commodities may come, then, through changes in the relations between commodities on the one hand, and money and credit on the other.

Now this upward secular trend in commodity prices means that money and credit has expanded relative to the quantity of commodities. It is probably true that the total quantity of goods has been increasing, but this increase has not been keeping pace with the increases in the quantity of money and credit. The upward secular trend, then, has for its immediate occasion the increasing quantity of money and credit, and we must turn to the money and banking indices for an explanation of this fact.

Major cycles: The characteristic major cycle can be observed for the commodity prices just as clearly as they were for the general price level of stocks. There is no appreciable lag between the major cycles of the two groups. The major cycle is a much more pronounced movement for the index of raw commodity prices than it is for the prices of all commodities and for manufactured commodities. It is no easy task to explain just why this is true. It is not clear just why the prices for the extractive and the raw commodity industries should be less stable than the prices for manufactured and mixed commodities, when the industries are so mutually interdependent. It may be possible that the index number for raw commodities is differently constructed from those for the other commodities. It may lie in the fact that the extractive and raw commodity industries are more subject to the vagaries of trade than are the other industries, but it would seem, then, that these fluctuations would be carried through and reflected in the prices of manufactured commodities. It is true that the cost of raw materials are but one of many costs in the manufacturing industry and that these relatively wide fluctuations are lost in the final cost summary. The important fact, however, remains that the major cyclical movement is characteristic



of the indices of the prices of commodities as well as for the prices of stocks.

Minor cycles: The minor cycle can be observed for the prices of commodities in much the same manner that this movement manifested itself in the prices of stocks, but in the case of commodities, the movement is not so well marked nor as clearly defined as it was for the prices of stocks. In the minor cycle of the prices of commodities, the characteristic three to nine months' lag behind the prices of stocks can be noticed. The prices of stocks, relative to the prices of commodities, as far as the minor cycle is concerned, may be termed an anticipatory index of the condition of business enterprise. The minor cyclical movement is more pronounced in the case of the prices of raw commodities than it is in the case of the prices of other commodities. The same explanation that was offered for this phenomenon in the case of the major cycle can be offered here for the minor cycle. The minor cyclical movement is a more pronounced one here than was the major cycle, and it can be clearly distinguished as a persistent movement.

Seasonal cycles: The graph of the index number of the prices of raw commodities shows the seasonal cycle quite clearly. The movement in this case is essentially the same as the seasonal cycle for the various other graphs that have been considered. The high point of this cycle comes approximately in December for each year, and the low point in August. The movement is quite smooth and well rounded. The other two indices of commodity prices do not show the seasonal cycle nearly so clearly as the raw commodity prices. Now and then, during different years, the cyclical movement can be detected, but is quite faint, and is not the pronounced movement of this character that we find in the case of the raw commodity prices.

Since the index of raw commodity prices is made up largely of agricultural prices, it may be assumed that this movement is characteristic of agriculture. The movement conforms roughly to the crop moving period in agriculture.





It is not an easy matter to understand just why prices should start to rise in the fall of the year when the crops are being moved and delivered to the purchasers, and conversely why the price should fall while there is but a small available supply upon the market, and when many of the raw commodities are as yet in the germination stage. This seasonal cycle may be explained by the fact that European speculators are purchasing wheat hedges in the fall of the year in the American market against the crops from the warmer climates; Argentina and Australia. The crops from these two countries are harvested at a later date, and the European speculators and dealers protect themselves by the purchase of these hedges. This serves to drive the price of agricultural commodities up in the fall of the year. The ensuing decline is occasioned through the sale of these same hedges upon the delivery and harvesting of the crops in Australia and in Argentina. It is thus the financing operations incidental to the purchase of the crops that occasions this seasonal cycle in the case of the raw commodities.

The prices of manufactured commodities and general commodities do not show this seasonal cycle. The raw materials which form the basis for the operations of the manufacturing industry, form but a fraction of the cost of these commodities. Consequently, the seasonal cycles are lost in these prices.

The seasonal cycle for the prices of stocks is just the converse of the cycle for the prices of raw commodities. This is to be expected, however, as will be clear from the explanation which will follow in this chapter. The important thing to notice is that there is a seasonal cycle in both the case of the prices of stocks and in the prices of raw commodities.

It may be well at this juncture to depart from a consideration of the movements of the prices of commodities to examine the significance of the close correlation between the movements of the prices of stocks and of commodities with reference to the secular trend, the major, minor, and seasonal cycles.



As we have already noticed, the upward secular trend of the prices of commodities is due primarily to monetary and credit inflation. The relation, then, between this trend and the same trend in the case of the prices of stocks, is not one of causality. They are both the results of the same underlying factors. We cannot affirm that a rising general level of commodity prices has caused the prices of stocks to rise concomitantly.

It is altogether possible that the major and minor cyclical movements in the case of commodities are one step in the chain of causality leading to these movements in the prices of stocks. Business enterprise deals with both the raw and the finished goods, though, and if this same movement is apparent for both prices it is hard to see just how it is possible to ascribe the cyclical movements of the commodity prices as a cause for these same movements in the prices of stocks. If the prices of manufactured goods alone showed these movements, then we might have one link in the causal sequence. We could proceed, in this case, from rising prices in manufactured goods, to a rising general level of profits and thence to a rising level of stock prices. But when the prices of raw commodities are observed to make the same movement as are the finished goods, it is not possible to adopt this line of reasoning. For at the same time that the finished goods are rising in price, the raw commodities are showing the same rise. The possibilities for profits on this account, then, are rather remote. It is necessary to go behind the immediate phenomena in hand in order to arrive at a proper conclusion. All that can be affirmed here is that the major and minor cycles are present in both the prices of stocks and in the prices of commodities, and that the underlying causes lie beneath both these groups of phenomena.

The seasonal cycle in the case of the prices of raw commodities may have a more direct bearing upon the prices of stocks than have either the major or the minor cycles. In this case the prices of manufactured goods do not show this movement to the same extent as do the prices for raw materials, and the





movement is hardly to be called distinct in this case. We find that the prices for raw commodities, under the seasonal movement, rise where the prices of stocks fall, and fall where the prices of stocks rise. This is as would be expected, for when the prices of raw materials advance without a corresponding advance in the prices of manufactured goods, the profits of business enterprise will decline temporarily at least. The seasonal cycle was also present in the case of the graphs showing monetary and banking statistics and the causal sequence was traced out at this time. It is apparent that a part of this seasonal cyclical movement in the case of the prices of stocks may be traced to this seasonal movement in the case of raw commodities. The seasonal movement in the case of the raw commodities may in turn be traced to the conditions in the agricultural and extractive industries themselves.

There yet remains one phenomenon in the case of the prices of commodities that must be considered. During the years 1898 and 1899 the prices of raw commodities rose at a faster rate than the prices of manufactured goods did. During these two years, also, the prices of stocks are observed to rise. In the year 1900 we had a marked and sharp decline in the general price level of stocks. This decline has been called a panic by some writers, and we may affirm, at least, that it was a very severe break in prices. During the last half of the year 1901, the entire year 1902, and the first half of the year 1903 we can again observe this same phenomenon: the prices of raw commodities rising at a faster rate than the prices of manufactured commodities, and the prices of stocks rising <sup>also.</sup> ~~econom-~~ <sup>^</sup> ~~ically.~~ In the fall of the year 1904 a very severe crisis occurred and a marked decline in the prices of stocks was the result. After the break in the prices of stocks had occurred, the prices of raw commodities again dropped and started to move more in harmony with the prices of manufactured commodities as had also been the case in the previous occasion mentioned. In the last part of the year 1906 and the first part of the year 1907 we can again observe the same phenomenon that



occurred on the two previous occasions. In the fall of 1907 a memorable panic occurred.

It is quite clear that all this is not without its significance. The situation is briefly this: Business enterprise is becoming more profitable and is expanding. This fact is recorded in the prices of shares in business enterprise. This expansion in business is followed by rising commodity prices, and these prices rise out of proportion to the rise in the case of the manufactured commodities. It is quite clear that this process cannot continue forever. Nor does it continue for long in any instance, for it is inevitably followed by a panic or crisis which is recorded in the severe break in the prices of stocks. We have here what some economists have termed a "maladjustment in the productive process"\*. For some reason or other business enterprise becomes more profitable and starts to expand. This creates a heavy demand for raw commodities, which is immediately reflected by a rise in price of these commodities. Now the prices of manufactured goods, which are evidently being turned out in large quantities, do not rise at the same rate. It is from this fact that we are said to have a con-

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\*Cf. Beveridge, W. H., Unemployment; May, R. E., Das Grundgesetz der Wirtschaftskrisen; Hobson, J. A., The Industrial System, Ch. III, XVIII; Aftalion, A., Essai d'une theorie des crises generales et periodique; Bonnat, M., Studien zur Theorie und Geschichte der Wirtschaftskrisen, Vol. I; Spiethoff, A., In Schmoller's Jahrbuch 1902, pp 721-759, 1903, pp 679-708, 1909 pp 445-467, 927-951, 1417-1437; Hull, G. H., Industrial Depressions; Lescure, J., Des crises generales et periodique de surproduction, pp 496-522; Veblen, T. B., Theory of Business Enterprise; Seligman, E. R. A., The Currency Problem and the Present Financial Situation (Introduction); Sombart, W., Die Störungen im Deutschen Wirtschaftsleben, in Schriften des Vereins für Socialpolitik, Vol. 113, pp 130-133; Carver, T. N., A Suggestion for a Theory of Industrial Depression, Q.J.E. May 1903.

These various authors cited do not all ascribe the crisis to a "maladjustment in the productive process" but some variation of this general idea is at the basis of them all. This expression is interpreted in many different ways as can be seen from an examination of these citations.





dition of "overproduction", or better, "maladjustment in the productive process". This maladjustment has been blamed for many of the crises that we have experienced. It has even been advanced by some authors as a fundamental cause of panics. It is quite clear that we cannot affirm any one thing as a fundamental cause of panics because of the great complexity of economic organization. It is quite clear, however, that this maladjustment in production does play a part in the business cycle movement, as can easily be seen from an examination of these graphs.

Thus it is that movements in the various types of commodities, principally the raw and manufactured, when they can be observed to move relatively in different directions or at a different rate of speed in the same direction, are a part of the causal nexus underlying changes in the general price level of stocks. They are not the final or the complete answer to any of these movements, but they play a part, and a very definite one, the sequence of which has already been traced.

There appears to be nothing more of significance between the movements of the prices of stocks and the prices of commodities, and the conclusion and summary of the results of this chapter follow:

Conclusion and Summary:

1. That the movements characteristic of the general price level of stocks are also characteristic of the prices of raw, general, and manufactured commodities, but that there is no reason for affirming causal connection between these two groups for all these movements.

2. That the secular trend in both the case of the prices of stocks and of commodities is occasional to a certain extent by monetary and credit inflation, and that there is no causal sequence between commodity and stock prices as far as this movement is concerned.

3. That the major and minor cycles in both cases are occasioned by an



underlying causal nexus, and that there is no connection between commodity prices and the prices of stocks as far as these movements are concerned.

4. That the evidence of the graphs points strongly towards the fact of a causal relation between the seasonal cycles in the case of the raw commodities and the general price level of stocks, the sequence travelling from raw commodity prices to prices of stocks.

5. That there is a certain element of truth in the various theories of crises and panics which attempt to account for the phenomenon by an appeal to "overproduction" or to a "maladjustment in the productive process" or to some variation of this general thesis, but that this fact cannot be ascribed as the sole or the final cause, but merely as one important cause in a complex nexus.





CHAPTER VIII. THE GENERAL PRICE LEVEL OF STOCKS AND

CROP PRODUCTION

The annual production of the following crops in the United States has been plotted upon one chart under the heading of "Crop Production". These crops are:-

1. Wheat - plotted in terms of bushels
2. Corn - plotted in terms of bushels
3. Oats - plotted in terms of bushels
4. Potatoes - plotted in terms of bushels
5. Cotton - plotted in terms of bales

This chart will be found appended to this study and a discussion of the nature and source of the data will be found in Appendix A. Since all of this data <sup>are</sup> ~~is~~ plotted in terms of bushels or bales it is free from the direct influence of money and credit. <sup>They are</sup> ~~It is~~ not plotted in prices and hence variations in the amount of credit and money, and variations in the velocity of circulation of credit and money, will not be recorded in this data. The movements which these graphs will be observed to make cannot, therefore, be ascribed to the direct action of the quantitative law. The characteristic movements of these monetary indices will be found in chapter IV.

The problem of this chapter is to attempt to correlate the movements of the data in the case of crop production with the movements of the general price level of stocks. The data for crop production is annual in character, and for this reason a very close correlation, especially for the smaller movements is not possible. The separation of the movements into classes, which has been followed in some of the chapters will not be made here, as it would obscure rather than clarify the analysis and discussion.



All of the data for the crop production shows a well marked upward secular trend. All of the data, save that for corn and potatoes, shows both the major and the minor cycle. Corn and potatoes, in some periods show a minor cycle, but this movement is not so persistent as it is in the case of the other crops. The seasonal cycle cannot be detected for any of the data of crops, because the data is annual in character and this movement is hence obscured.\*

In general the movements that the data of crop production make are in accord with the movements of similar character made by the general price level of stocks. The correlation cannot be called close, by any means, but it is easily distinguished and can be seen at a glance. The correlation is hindered by reason of the fact that we are dealing with monthly data in the case of the prices of stocks and annual data in the case of crop production.

Since the data for crops is not measured in terms of price we cannot ascribe changes in monetary and banking conditions as occasions operating directly upon these movements. Monetary and banking conditions may be an indirect cause, and they doubtless play their part, but they cannot be said to operate directly upon the movements of the data for crop production. We must look to other sources for our explanation of these phenomena.

It is difficult to attempt to trace any causal sequence between these characteristic movements in the case of crop production and in the case of the prices of stock. Yet there is a connection, although it may be held to be but an indirect one, and this connection is real. The sequence in this case proceeds from crop production to the general price level, for the general level of stock prices is affected by the condition of the crops to a much greater extent than is the condition of the crops by the prices of stocks. The effect of crop pro-

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\*We have here another illustration of the desirability of using monthly data wherever it is possible. A very interesting comparison is lost here, because of the fact that it was not possible to obtain monthly data for the period under consideration.





duction upon the general price level of stocks may be traced along two different lines.

In the first place a good harvest, a "bumper crop", is a source of new wealth. It represents an addition to the wealth of the country. This addition of new wealth differs from additions to new wealth through other kinds of industries in that we have a very rapid addition to the wealth of the country in a relatively short time in the case of agriculture whereas in the other industries the addition to the wealth is a much more gradual process. The temporal element in the case of agriculture is small relative to the element of quantity.\* This is not true in the other types of industries. This addition to the stock of wealth means a greater exchange power, a greater purchasing power, to the country. It does not always mean an increased purchasing power to the agricultural classes, however. This addition to the purchasing power means an addition to the supply of goods as well, and so we cannot affirm that the general price level would thereby be raised\*\*. The effect, however, upon the condition of business is quite marked, because the new crop represents an increase in the sum total of wealth, and from the effect upon the business optimism of the time. Agricultural crop production also has an indirect influence upon the condition of business enterprise that is exercised by the effect of bad and good crops upon the credit and banking fabric of the country. This new addition to wealth forms the basis of credit extensions. It increases the deposits in the banks and forms the basis for new extensions of credit to both farmers and other enterprisers. This serves to improve the condition of business enterprise, by granting more credit at a lower rate. In this way, also, prices are advanced, and it is possible for en-

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\*Cf. In this connection the writings of the Physiocrats, especially Du Pont, Quesnay, de Gournay, Turgot, and M<sup>a</sup>c<sup>a</sup>cler de la Riviere.

\*\*Gregory King's law is of interest in this connection. He affirmed that small changes in the supply of agricultural commodities produced very large changes in the prices of these same commodities.



terprisers to enjoy a higher rate of profit upon their investments. When crops are not good, this situation does not prevail. Many of the farmers cannot pay their loans; they must be either carried by the banks, or else the banks must force them to pay by foreclosure and bankruptcy. The assets of many banks tend to become "frozen", and often some banks are forced into failure. This operates so as to reduce the deposits in banks, to reduce the amount of credit granted by them. This has a deadening effect upon business enterprise in that it curtails credit extensions, and also in that it tends to lower prices. In this way crop production has a somewhat indirect, but nevertheless a very real, effect upon business enterprise, and consequently upon the general price level of stocks.

An abundant harvest also means that people have more of the essentials, it means that "times are good", and it means that popular optimism is keyed to a higher pitch. This effect of good harvests has long been noted, but the sequence has never been accurately traced out. We often say that the "psychological effect" <sup>it</sup> ~~that~~ a good harvest promotes business prosperity. This means that we do not know just how it works, how the sequence runs, but we know that it does. Bad harvests, bad crop production, means precisely the opposite of this analysis. It means a smaller supply of wealth and a consequent business pessimism resulting in what we call poorer business and less entrepreneur prosperity.

This last analysis shows the effect of the production of crops upon the general price level of stocks by first changing the condition of business enterprise. Since the prices of stocks reflect the condition of business enterprise, anything that tends to affect business, will in turn affect the prices of stocks. But the prices of stocks are affected by crop production in yet another way. The traders on the stock exchange are sensitive to what they term the "fundamental conditions". The production of crops is such a fundamental condition. Advance crop reports will be reflected directly in the "tone" of the market. A favorable advance report will operate upon the minds of the buying interests so as to in-





duce them to offer higher prices for stocks. It will operate upon the minds of the selling interests so as to induce them to hold the stocks which they have, and, possibly, to buy more stock. An unfavorable advance report will tend to occasion more selling, completed selling and short selling. In this way crop production tends to influence the general price level of stocks by operating upon the judgments of stock traders and inducing them to "bull" or "bear" the market. Also, through the medium of the advance crop reports, the stock market is often able to form a judgment in advance of the actual harvest, and the prices of stocks thus tends to reflect the condition of business enterprise as it is thought to be in the future.

There remains one other point of interest in connection with the indices of crop production. There are four marked depressions in the prices of securities. The first is the memorable crisis of 1893. The second is the depression occurring in the year 1900. The third is the crisis of 1903 and 1904, and the fourth is the "stock exchange" or "money market panic" of 1907. It is interesting to note that before each one of these declines in the prices of stocks, some of which were quite severe and rapid, there had been a very perceptible falling off in the production of crops. During the two years preceding the panic of 1893 there had been a steady decline in the production of all the crops except cotton and potatoes, and cotton and potatoes declined in 1891, and recovered but slightly during 1892. Prior to the decline in 1900 there had been two years of relatively small crops. The year 1902, just prior to the panic of the following year is a year of relatively small crops. The year 1906, just preceding the panic of the following year, is one of a shrinkage in the production of crops. There is nothing new in this phenomenon for many writers on business, trade, and commerce have called attention to it\*. This has led some writers to ascribe either

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\*Scott, W. R., Joint Stock Companies to 1720, vol. I. The depressions and panics from 1553 to 1720 in England are discussed. Bad crops are a concomitant of most of them.



bad harvests or natural agents affecting the harvests as being the cause of business depressions and panics\*. These theories also ascribe a certain periodicity to crises. While there is nothing in any of the descriptions of these theories that will go to prove that bad crops are a final cause in the sequence nor that there is any regular, ascertainable, periodicity in the economic crises, it must be affirmed that crop production is a part of the story. The fact that crop production exerts an influence upon the condition of business enterprise and that it affects the general price level of stocks serves to show that it is possible for a bad harvest to be one of the factors which assist in bringing on a crisis. Crop production, also, affects the condition of credit and banking, and in this way serves to affect the situation underlying the crisis. The monetary and banking indices show this effect\*\*. If the condition of business enterprise is sound, then a bad harvest would not be likely to precipitate a crisis, but if the condition is otherwise, a bad harvest might not only precipitate a crisis, but it might also add considerably to its severity. This thesis does not attempt to defend any single theory for the business cycles nor for any hard and fast rule for periodicity, although the movements are distinctly periodic, but it must be affirmed that crop production is an important factor underlying the condition of business

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\*Cf. Jevons, W. S., Investigations in Currency and Finance. The theory advanced in this work has become almost a classic in the science of economics. It is known as "Jevons' Sun Spot Theory". Jevons affirms that crises are caused by bad harvests, which in turn are caused by an insufficient amount of solar heat. Jevons noticed that the periodicity of the sun spots was similar to the periodicity of the economic crises, and hence concluded that the crises were caused by the fact that the sun spots faced the earth and afforded less heat for the growing crops. This caused a crop shortage and a consequent crisis. This theory is interesting, also, from the point of view of scientific method. The method employed in this study is the same that Jevons employed, namely, concomitant variations. His theory illustrates the error into which one is able to fall through a careless use in this method. There are some other writers who affirm the periodicity and the cause of crises to bad harvests and the agencies of weather, etc., which occasion bad harvests. See also Carr, N. T., The Sun; Its Constitution; Its Phenomena; Its Condition. Carrington, R. C., Observations on the Spots on the Sun from November 9, 1853, to March 24, 1861. Haxen, H. A., Sun Spots and Predictions in Science. Herschel, Sir Wm. Observations Tending to Investigate the Nature of





enterprise and that crop production has played an important part in the several crises and depressions noted. The effect, then, of crop production upon the crises, as indicated by the general price level of stocks is pronounced, and they are a part of the causal nexus underlying this phenomena.

The principal conclusions of this chapter are:

1. That the secular trend, the major cycle, and the minor cycle, are found in the indices of crop production in very much the same way that they were found in the case of the indices of the prices of stocks.

2. That there is, to some extent, a causal sequence between the production of the various crops and the general price level of stocks and that sequence is somewhat as follows:

(a) By operating so as to increase or decrease the total amount of wealth in a country, and thus altering the condition of business enterprise, and hence altering the general price level of stocks.

(b) By operating so as to increase or to decrease the amount of credit which banks and other institutions are able to extend, and also by operating upon the stability and liquidity of these institutions.

(c) By so altering the frame of mind of business enterprisers so as to induce them to expand or to contract their projects.

(d) By altering the frame of mind of stock traders, through the medium of advance crop reports, and thus giving buoyancy to stock values or depressing these values. In this way crop production operates directly upon the general level of stock prices, which reflect the putative condition of the crops at some time in advance.

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the Sun, etc. Hunter, W. W., and Locklear, J. N., Sun Spots and Famines, in the Nineteenth Century for Nov. 1877. Kedzie, J. H., Speculations, Solar Heat, Gravitation, and Sun Spots. Beveridge, W. H., in the March and June, 1920 issues of the Economic Journal. Wallace, A. R., Bad Times. Young, A. C., The Sun and the Phenomena of its Atmosphere, in Half Hours with Modern Scientists.

\*\*Cf. Chapter V.



3. That, while bad harvests cannot be accounted as the cause of economic crises, nor as the factor alone lending them any such periodicity that they might be found to possess, they have been a part of the crises of 1893, 1900, 1903-04, and 1907, and that the several theories that attempt to account for crises by harvests have some elements of truth in them, but they have neglected many other important factors, and consequently, do not tell the whole story.





CHAPTER IX. THE GENERAL PRICE LEVEL OF STOCKS AND TRADING  
ON THE STOCK EXCHANGES.

Appended to this study there will be found a chart with two graphs plotted upon it. The chart is labelled "Stock Exchange Trading Group" and two graphs are composed of the following series of data:-

1. Volume of Sales on the New York Stock Exchange
2. Total Clearings of Securities on all Stock Exchanges in the United States

A discussion of the nature and source of the data used in making these indices will be found in Appendix A. The data for the volume of sales on the New York Stock Exchange <sup>are</sup> ~~is~~ recorded in terms of number of shares bought and sold. The data for the total clearings of securities on all stock exchanges <sup>are</sup> ~~is~~ recorded in terms of dollars. It is the purpose of this chapter to compare and correlate the movements of the graphs indicating the trading activity on the stock exchanges with the graphs showing the general price level of stocks.

The movements of both indices indicating the activity of trade on the stock exchanges are very similar to those made by the graphs indicating the general level of prices. The graph of the volume of sales on the New York Stock Exchange appears to move in closer harmony with those showing the prices of stocks than does the graph of the clearings of securities on all exchanges. This is to be expected, however, because the indices of the prices of stocks was made from price data on the New York Stock Exchange. Both indices of stock trading show the secular trend, the major cycle, the minor cycle, and the seasonal cycle. These movements are clearer for the graph showing volume of sales on the New York Stock Exchange, and the dispersion in the case of this data is also probably greater.

This correlation means that as the general price level of stocks advances the trading in stocks increases, and as the general price level of stocks



declines, the trading in them declines. No causal relation can be affirmed between these correlations, and all that one is justified in saying is that the general price level of stocks and the volume of trading on the exchanges vary directly. We cannot explain a high level of stock prices by the fact that there is a larger volume of trading taking place at this time, we cannot say that there is more buying, because every transaction on the exchanges is a completed purchase and sale, and for the same reason, we cannot affirm that low prices are the results of a small amount of trading. It is apparent that the explanation of the movements of the general price level of stocks is at the same time an answer to the amount of trading taking place.

In periods of increasing business activity, there is an increasing buoyancy in trade. This is manifested upon the stock exchanges in just the same manner that it is manifested in other lines of business activity. When the general price level of stocks rises or falls, it is indicative of a change in the condition of business enterprise. When the general price level of stocks rises or falls the volume of sales and the value of the amount of shares cleared rises and falls likewise. A rising amount of shares cleared, and a rising amount of trading in shares, indicates that this phase of business enterprise is expanding. A falling amount of volume of sales and shares cleared indicates that this phase of business enterprise is declining. Here the general price level of stocks is affirmed as an index of the quantitative aspects of business enterprise as shown by indices of the trading in securities.

The amount of shares traded and cleared on the stock exchanges are conditioned, to a certain extent, by the condition of the money market. In times of stringency it is not so easy to obtain money for speculative purposes. The rate for call loans advances, and trading becomes a more expensive operation. This tends to check speculation. Times of monetary ease tend to stimulate trading and speculation upon the stock exchanges. The indices of trading are fairly reliable





indices of the condition of business enterprise from the point of view of banking, and since the movements that these indices make find their counterpart in the movements that the indices of the general price level of stocks makes, these prices of stocks are further confirmed as an index of the condition of business enterprise.

There are many points of interest in connection with the trading upon the stock exchanges. It would be interesting to study the different methods of trading to study the effects of trading upon corporate development and upon the financial organization of society. Unfortunately, a discussion of these matters is beyond the scope of this discussion, and we must remain satisfied with the bare results of the correlation between the movements of the indices of trading upon the stock exchange and those of the prices of stocks\*.

The conclusions of this chapter are as follows:-

1. That the indices showing the volume of trading upon the stock exchanges of the United States show the secular trend, the major, minor, and seasonal cycles, in essentially the same manner that these movements are manifest for the indices of the general price level of stocks.

2. That this fact of correlation affirms that the general price level of stocks is a good index of the condition of business enterprise from the quantitative point of view of amount of trading, and also indirectly from the point of view of credit and banking.

3. That it is through trading in shares that fluctuations in the prices of stocks occur, but that trading is in no sense a fundamental cause of the movements.

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\*The reader is referred to the bibliography appended to this study for material upon stock exchange trading, investment, speculation, etc. Some of the more important works dealing with the American exchanges are: Pratt, S.S., The Work of Wall Street; Clews, H., Twenty Eight Years in Wall Street; Babson, R. W., Bonds and Stocks; Crump, A., The Theory of Stock Speculation; Emery, H. C., Speculation upon the Stock and Produce Exchanges of the U.S.; Conant, C. A., Wall Street and the Country; England, Minnie T., On Speculation in Relation to the World's Prosperity, 1897-1902; Gibson, T., The Elements of Speculation; Nelson, S.A., The A.B.C. of Stock Speculation.



CHAPTER X. PSYCHOLOGICAL FACTORS AND THE GENERAL  
PRICE LEVEL OF STOCKS

The term "psychological factors" has been applied to news items, rumors, important events, judicial decisions, etc., which are often said to have an important bearing upon the prices of stocks. The purpose of this chapter is to study these factors in relation to the general price level of stocks, and to see just what effect they have had upon it. It was not thought wise to summarize all of these factors in an appendix, but to set down in this chapter such factors that seem to have had an important effect, and to examine closely the nature of this effect and the conditions under which it was brought about. Important psychological factors that do not appear to have had any effect upon the general price level of stocks will also be mentioned and discussed.

The nature and source of these various items are discussed in Appendix A. In this appendix there is also briefly discussed the manner in which these factors are said to operate, and the conditions under which they will operate.

The plan of this chapter differs from that of its predecessors. The psychological factors will be compared with the general price level of stocks from the beginning of the indices to the end. The discussion will be taken up by periods, beginning with the year 1890 and ending with the year 1917, rather than by movements, as was done in the previous chapters.

1890-1892

During this period we have one complete minor cycle. During the first few months of the year 1900<sup>1899</sup> we have rising values of stock prices in the face of rather adverse news. Several corporations passed dividends and failed to make payments of interest. There was some trouble in financial circles, especially with the Sixth National Bank in New York. In April, the reserves of the New York banks were reported as low. In spite of all these reports, the tone of the New





York stock market was reported as buoyant. In April the general price level of railroad stocks started to decline and in August the other corporation stock prices followed. In July the agricultural crop report was held to be favorable. In August the news items reported a money panic, due to the shortage of reserves in the New York City banks. This condition was reported the following month as easier. The Baring crisis in London and the defeat of the Republicans in the November elections were held to be factors contributing to the decline. In November the general price level of stocks is at its lowest point for both railroad and other shares, and from this point on we have the upward trend of this minor cycle. During the early parts of the year 1891, the tone of the stock exchange was reported as buoyant. The rise in this phase of the minor cycle was not a steady one by any means. During these early months the gold exports were rather large, but the United States started to import gold beginning in September. The July crop reports were reported as good, and from this point on the rise in the upward phase of this minor cycle became more pronounced.

#### 1892-1899

This period covers one complete minor cycle. This minor cycle includes the panic of 1893, which was severe and of prolonged duration. During the year 1892 the general price level of railroad stocks declined, and the general price level of other stocks rose. This cycle may be said to be composed of three phases. The first phase, a decline, began in January 1893. This decline persisted until August of the same year. The second phase of the panic began then at this point; and we had a prolonged period of depression during which time the general price level of both railroad and other stocks was at a very low point. This period of depressions lasts until June, 1897. After this month was reached the third phase of the minor cycle began. This phase was a period of rising values for the prices of stocks and it culminated in October, 1899.



The year 1892 was characterized by a number of interesting events. In the first place, the free silver bill was up for discussion, but was not settled at this time. The money market tone was reported uniformly throughout this year as "easy". In September of this year the cholera "scare" was held to have been the cause of the very small decline in the prices of stocks that took place at this time. The movement that this "scare" is said to have been the cause is scarcely appreciable, and in no way differs from the ordinary month to month variation that the general price level of stocks appears to make. The election of Cleveland to the Presidency did not appear to have any appreciable effect upon the stock market in November. During the great decline in the prices of stocks that took place early in the year 1893, the news items reported that there were very large and continued exports of gold, and that the treasury gold stock was rapidly being depleted. At the same time there appeared to be much distress in financial circles with many bank failures, especially in the West. There were also many business failures at this time. When the first phase of this cycle ended, the tone of the money market was reported as being greatly improved. The silver purchase repeal bill was signed in November, and this appeared to have exercised a salutary effect on the money market. During the first year of the second phase of this panic, 1894, there were no events of striking importance that took place. Trading upon the stock exchanges appeared to be irregular and rather quiet. Business was reported as depressed. In 1895 the Morgan-Belmont syndicate was closed and this appeared to lend a greater support to the money market, which was reported as being perceptibly easier. Abroad, political and financial conditions appeared to be rather disturbing and this is reported as aiding the depressed condition of the money market and of the stock exchange at this time. Heavy gold exports continued during this year. A temporary reaction towards higher prices occurred during this year, but it was of short duration. The year 1896 was one of uneasiness in financial circles due to the question of free silver and the prospective Presidential





election at this time. When Bryan~~7~~ was defeated in November of this year, the tone in both stock exchange and financial circles was reported as improved. In 1897 the psychological factors appear to be improving in tone, that is, to make for higher prices in the case of stocks. The Dingley tariff measure was passed and the crop situation was held to be favorable. In the fall of this year the yellow fever "peril" proved a hindrance to trade. The prices of stocks declined temporarily at this point. This year marks the beginning of the third phase of the minor cycle, but it was not until 1898 that the rise becomes a definitely marked movement. The upward movement in the prices of stocks for this year is irregular, and writers in the financial journals report this to be due to the uneasy situation of affairs with Spain. In February of this year the Maine was sunk. In the following month war with Spain was declared. This event was reported as having caused a very great uneasiness upon the exchange and much liquidation of securities. With the victory of American arms and the signing of the peace protocols, the tone of the exchange was reported as improved and the prices on the stock exchange rose.

#### 1900-1904.

The period 1899-1900 was quite irregular as far as the movements in the general price level of stocks were concerned. There was no cyclical movement and there was little in the way of psychological factors that shed any light upon these irregular movements. Furthermore, the graph is broken at this point to secure the introduction of a new series of indices of the general price level of stocks.

The period 1900-1904 embraced a complete minor cycle of two phases. The first phase, a rising movement, began in 1900. The second phase, a decline, began in August, 1902, and culminated in May, 1904.

In the year 1900, the gold standard act became a law, but there were many disquieting events that prevented the rise from becoming a rapid one in that year.



With the defeat of Bryan in November, the tone of the stock exchange appeared to improve. During the year 1901 the monetary conditions abroad were in a bad condition. President McKinley was shot in September of this year. In spite of these unfavorable reports the prices of railroad stocks gained steadily and the prices of the other stocks held their own. The year 1902 ushered in a series of unhappy events. The crop reports were very bad during this period of time, because of the continued bad weather. The anthracite coal strike was another event that served to make the tone on the stock exchange an uneasy one. Toward the end of the year a distinct monetary stringency developed, but the situation with reference to the crops improved. Railroad stocks continued to rise during the early part of this year and the other stocks continued to hold their own. In August the first phase of this minor cycle culminated, and from this month on the second phase of the minor cycle began. 1903 was a year of rapidly declining prices for both railroad and other securities. This year was also a year of bad news as far as the point of view of large sized business enterprise was concerned. Roosevelt was pushing his anti-trust legislation; the northern securities decision was handed down; there were many labor troubles; and business appeared to be in a rather bad way financially. The news continued to be rather unfavorable to business during 1904 and the prices of stocks continued their decline until May, when a new minor cycle began.

This decline that took place in 1903-1904 is referred to as the panic of 1903-1904.

#### 1904-1907

The period 1904-1907 embraced a complete minor cycle. The first phase, a period of rising prices, began in April, 1904, and extended to January, 1906. The second phase, a period of declining prices, began in February, 1906, and extended to October, 1907. The second phase of this minor cycle was the panic of 1907.





There were very few events of significance during the year 1905, and the prices of both railroad and other stocks rose at a very rapid rate at this time. Industry was reported as being good and trade as active. The absence of unfavorable news may be held as one of the factors making for the rapid rise in the prices of securities during this period. 1906 was a year of very irregular stock prices, and the beginnings of the decline can be clearly seen at this time. In January of this year, Jacob Schiff warned of the impending panic. There were difficulties with labor in the coal mines, and Roosevelt spoke against the acquisition of large fortunes. Towards the end of this year the news items spoke of a monetary stringency, and the general trend of affairs seemed to denote that a halt had come over the very rapid rise in the prices of securities that preceded this period. The signs of the impending panic appeared to be in the air. The panic on the stock exchange began in January 1907. It began with a great stringency in the monetary markets, and with a great deal of borrowing by corporations on short time notes. The news items reported the panic as beginning in March, 1907, but a glance at the indices of the prices of stocks will serve to show that the decline in values had begun in January, and that this decline was already well under way in March. The Financial Review reports that this panic was caused by the "impairment of confidence in the railroads following a declaration of the unfavorable attitude of the government". There seems to be absolutely no evidence to show that this single event was the cause of the severe decline in the prices of stocks that characterized the panic of 1907. During the rest of this year, Roosevelt continued to make speeches that were regarded as unfavorable to large business enterprises. Newspapers reported that bond syndicates were having a great deal of difficulty in disposing of their purchases of bonds. In October of this year, the period of falling prices came to an end.

#### 1908-1910

This period embraced a complete minor cycle of two phases. The first



phase, a rise, began in 1908 and culminated in 1909 for both railroad and other securities. The second phase, a decline, ended in July, 1910.

1908 was a year of unfavorable events from the point of view of the stock exchange, but in spite of these things the rise in the prices of stocks was quite marked and very rapid. The year 1908 marks the recovery from the panic of 1907, and this recovery was apparently not halted by the presidential election of the year, nor by any of the events that were termed unfavorable by financial writers. From the point of view of stock exchange traders the news for the year 1909 was rather negative in character. The prosecution of trusts continued during this year. Mr. Harriman died after a month's illness. In 1910 it appeared that Taft was going to continue Roosevelt's policies with reference to the trusts. The tone of the stock exchange was described at this time as "decidedly gloomy". There were many strikes in progress during this year. Towards the end of the year, the business outlook appeared to be brighter; this was held to be due to the Democratic victory in the congressional elections.

#### 1911-1914

This period embraced a complete minor cycle of two phases. The first phase of this minor cycle began in September, 1911, and ended in September, 1912. This was a period of rising stock prices. The second phase began where the first phase ended, and extended to the close of the stock exchange in August, 1914. This was a period of very gradual decline in the general level of the prices of both railroad other stocks.

The year 1911 was also a year of rather unfavorable news to business enterprisers of large affairs. Trade was reported as slackening; the Interstate Commerce Commission refused to sanction higher rates in a number of railroad decisions; there were rumors of an impending war between England and Germany; and, finally, there were some unfavorable judicial decisions awarded on the government





anti-trust suits together with the promise of more prosecution. The prices of stocks declined steadily until September, 1911.

The year 1912 appeared to be a year of more favorable events as far as the traders on the stock exchange were concerned. The crop outlook was reported as improved and business was active. There were some events that were not so favorably received, however. Among these can be noted labor troubles in many industries; the Titanic disaster; the formation of the Progressive Party; and much foreign selling on the stock exchange. The prices of stocks rose steadily during this year up to the month of September.

The gradual decline in the prices of stocks began at this point and persisted until the stock exchange was closed in 1914. In 1913 Woodrow Wilson was inaugurated President. His speeches appeared as disturbing, since he came out quite clearly for public policy. The income tax law was passed during this year. It was clear in 1913 that war was impending in Europe. The Federal Reserve act was passed in this year. The Balkan situation was regarded as alarming. In 1914 financial writers described Wilson's attitude as more favorable to trusts than his two predecessors had been. In this year the Federal Reserve System appeared clearly as having the approval of the banks, if the large number of banks securing membership can be used as an index. During this year the Claflin failure occurred, and foreign trade was regarded as unsatisfactory. In July, 1914, the great European war began, and the heavy liquidation of securities proved the occasion for the closing of the exchange.

#### 1915-1917

This period embraced a complete minor cycle. The first phase of this cycle was a period of rising stock prices that began in 1915 and culminated in September, 1916. The ensuing decline, the second phase, ended December, 1917.

During this period the European war was being waged and conditions were unusual on this account. During the year 1915, the Germans were successful on



the field. Large orders began to come into the United States from the Allied Nations for food and for war materials. In May the Lusitania was sunk, but this untoward event does not appear to have had any appreciable effect in halting the rapid rise in the prices of stocks that was taking place at this time. The German submarine campaign appeared to have had but little effect upon the prices of stocks. It is quite apparent at this time that large additions were being made to the amount of funded obligations of the warring nations. This operated, of course, to increase the amount of credit. In 1916 business appeared everywhere to be favorable. Wages rose, as well as did the prices for agricultural produce. This was the result of heavy war buying to aid in the prosecution of the war. President Wilson's policies in reference to Germany appeared to be undergoing a change at this time, and his controversy with Germany was slowly drawing to a head. The Financial Review reports that there was a feeling that the war would last for some time yet, and that this had a salutary effect upon the condition of business enterprise. The funded debts of the warring countries were steadily increased during this year. In November, Wilson was re-elected by a close vote. Rumors that peace was close at hand appeared to have assisted the decline in the prices of stocks that took place at this time. The year 1917 was one of steadily declining prices of stocks. Early in the year our relations with Germany assumed a very unsatisfactory aspect and in April we declared war upon them. During this year the Russian revolution took place. In June of this year, our first Liberty Loan proved to be a success and resulted in a small addition to the credit of the country. The attempt of the Pope to secure peace proved to be a failure. In October the second Liberty Loan was successfully floated. During the entire year the market was reported as weak due to many unfavorable events.

It is not an easy matter to trace the effect that these events have had upon the general price level of stocks. In many cases it is clear that important events have enabled traders in stocks to foretell the effect of these events, and





to discount this effect into a present worth for prices of securities. Some of these psychological factors appear to thus affect the prices of particular stocks, or particular groups of stocks, and some affect stocks generally considered. Those that affect the prices of stocks generally considered will have the greatest effect upon the general price level of stocks. These psychological factors affect the prices of stocks very directly, when they affect these prices at all. They aid stock traders in forming a judgment as to the values of securities in advance. In this way the prices of stocks came to be an anticipatory index of the condition of business enterprise. The effect of these events is very often recorded at a later date in other indices of the condition of business enterprise and the condition of credit. This will account for the lag that these indices show when compared to the indices of the general price level of stocks.

An untoward event will not cause a perceptible change in the general price level of stocks unless it affects the conditions that are fundamental to these prices. The mere fact of the death of an important man will have little or no effect at all, unless it is quite clear that his death will affect the earning ability of business enterprise. This fact is shown in the discussion in the first parts of this chapter. Likewise, a favorable event will not cause any perceptible change in the general price level of stocks unless it affects the conditions fundamental to these prices.

If the position of business enterprise is already weak, the announcement of some unfavorable judicial decision, or some other item of news not considered very favorable to business enterprise, will serve to precipitate a decline in price. On the other hand, if the position of business enterprise is manifestly very sound, a favorable bit of news may serve to cause a very pronounced rise in prices of stocks.

The cyclical movements that the general price level of stocks makes are very closely related to the quality of the psychological factors. A close exami-



nation of the news items in relation to the cyclical movements, which will be found in the earlier paragraphs of this chapter, shows that the quality of these psychological factors appear to move in much the same manner that the cycles, especially the minor cycles, do themselves. During the various phases of the cycles the quality of the news is such as to be in close harmony with the condition of business enterprise. That is to say, during the phase of a minor cycle, where prices are on the decline, then the news items are of such a nature that would tend to promote such a condition - in a word they are unfavorable to business enterprise. During the phase where prices are rising, then the news items are of such a condition as to tend to promote a rising value for stock - they are favorable to business enterprise. Thus it is that the psychological factors move in cycles in much the same manner that the prices of the stocks themselves do. It is not possible to plot these items of news upon a chart, as the various indices herein considered have been plotted, but a comparison of prices of stocks with news items, over a long period of time, reveals that the quality of these news items, with reference to business enterprise, varies directly with the condition of business enterprise, and consequently with the general price level of stocks. No perceptible lag can be noted between the psychological factors and the general price level of stocks. Such a computation would be very difficult to make, because of the nature of these psychological factors.

It is believed that these psychological factors are one of the steps in the causal sequence underlying the general price level of stocks. It is clear from what has already been analyzed that there is an important relation between the movements of the general price level of stocks and the quality of the psychological factors. These items of news affect the prices of stocks in a very direct way. They are very quickly communicated to the traders on the stock exchange and they form a part of the judgments that these traders make in estimating the values of securities, and consequently the prices they are willing to pay for





them. It cannot be affirmed that these factors are the final cause, for we have to go but one step further, and ask for the causes for these factors. But they are most certainly a part, and a very real and definite part, of the nexus underlying the prices of stocks.

This cyclical movement that we have just observed the psychological factors to make is at the very basis of our lives. A close examination reveals that it is the tendency for people to act in this way. The intellectual, emotional, and perhaps even the physical phases of life itself are cyclical. Pessimism follows optimism; health often follows periods of illness; love, fear, anger, <sup>and</sup> hate pass into one another; we learn and forget; accomplish and then often do nothing for periods. In face of these facts it is quite natural, and to be expected, that the elements that compose these psychological factors should move in cycles. When we have answered the question of why, we will have answered the very question of life itself.

Conclusions:-

1. That the psychological factors have had a very important effect upon the general price level of stocks.

2. That in order that these psychological factors affect the general price level of stocks it is necessary that they affect the conditions which are fundamental to this general price level, that is, the condition of business enterprise.

3. That it is through these factors that traders on the stock exchange are able to form judgments as the value of stocks, expressed in terms of price; and that it is through this fact that these traders are able to anticipate the actual working out of conditions that these psychological factors indicate will take place in the immediate future. In this way the general price level of stocks comes to be an anticipatory index of the condition of business enterprise, and



the other indices show a perceptible lag when compared with it.

4. That as the position of business enterprise is weak or strong, the effect of these psychological factors will be great or little; and that these factors are often able to "set off" a general rise or a decline in the prices of stocks provided the technical position of the market is of a like nature to these factors.

5. That the psychological factors move in cycles in a way that is quite similar to those in which the general price level of stocks moves; and that this cyclical movement is characteristic of the psychological factors in just the same way that it is characteristic of economic factors; and of the very facts at the basis of life.





## CHAPTER XI. CONCLUSION

The conclusions of the individual chapters of this investigation have been stated at the end of each chapter. It now remains to combine these separate and individual conclusions into a series of general conclusions, and into a thesis which shall embody the results of this investigation.

It was stated in the introduction that the object of this study was twofold. In the first place, it was desired to unravel as much as possible of the causal nexus underlying the fluctuations of the prices of stocks; to find out to what extent the prices of stocks are governed and controlled by economic factors and conditions; to determine the sequence for these fluctuations; and to estimate the possibility of formulating a law or series of laws which will account for the movements that the general price level of stocks make. In the second place, it was desired to examine the general price level of stocks and to see to what extent it is representative of the condition of business enterprise; to see if an index number of the prices of stocks fluctuates with the changes in the condition of business enterprise; and to see if the general price level of stocks is a satisfactory barometer for use in determining business policy. In this conclusion, these objects will be taken up in order.

### The Causal Nexus Underlying the General Price Level of Stocks:-

It is quite evident from the discussion contained in the previous chapters that a complete solution of the problem of causality for the price changes in stocks is impossible. This Gordian Knot cannot be untangled with the science of economics and statistics in their present condition. It is realized that a complete explanation of the causality of the simplest facts of science is impossible, but science, by means of certain fundamental assumptions, has been able to explain many things in terms of causality. It is impossible to give any such complete explanation of the movements made by the general price level of stocks



in these terms. It is realized that the category of cause and effect is merely a category of the mind and that it is not necessarily connected with the essence of phenomena\*. It is, nevertheless, a very convenient method of explanation, provided its limitations are kept in mind.

While it is realized that no complete explanation can be made for the movements of the general price level of stocks, a great many important facts can be explained and the causal sequence, within certain limits, can be worked out in a satisfactory manner.

The marked upward secular trend of the general price level of stocks finds its counterpart in practically all the other indices. This shows that this movement has been a characteristic one for business enterprise for the period 1890-1918. In the case of the indices of the general price level of stocks the analysis which has been made in the preceding chapters points to the fact that this movement has been the product of an increasing amount of money and credit and also an improvement in the condition of business enterprise. The increasing amount of money and credit is clearly shown by the monetary and banking indices, and the sequence of this phenomenon is traced in chapter IV, which deals with these indices. The improvement in the condition of business enterprise is shown by the indices of earnings and dividends and also by the index of the number of business failures. The increasing rate of earnings for corporations is shown on the chart upon which these indices have been plotted, and an explanation of the sequence of the effect of these earnings and dividends upon the general price level of stocks is given in chapter III. The index of the number of business failures has a very much smaller secular trend than those indices showing the increasing number of corporations (listings of bonds and stocks, new incorporations, new building). This will serve to bear out the contention that business

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\*Cf. Hume, David, A Treatise on Human Nature.





enterprise improved in its condition during the period considered, because the number of failures did not keep pace with the number of new business units organized. These indices will be found on the chart for the business enterprise group, parts I and II, and an analysis of the sequence of the relation between these groups of indices will be found in chapter V. It may be thought that the rising secular trend in the case of the general price level of stocks was caused by a declining rate of interest, while the dividends either increased, remained the same, or decreased at a lower rate than the rate of interest. An examination of the indices of the rates of interest, which will be found on the chart showing the monetary and banking group reveals the fact that there has been no such decline for the period considered.

The major cycle for the indices of the prices of stocks finds its counterpart in many of the other indices discussed in this investigation. This shows that this movement is a characteristic one for business enterprise. This movement is not nearly so clear as some of the other movements the various indices are observed to make, and the movement is very gradual. This movement is not a wide one, and the temporal axis is large relative to the quantitative axis. For these reasons this major cycle is not of as great importance as the minor cycle.

The immediate causes or occasions for this movement are found in those conditions that govern business enterprise and credit. These movements are cyclical because business enterprise, of which these stocks and shares are representative, fluctuates in similar cycles. In this movement, credit and money play an important part. An increasing amount of money very generally means increasing bank reserves. This will be followed by an increasing amount of loans and deposits, because the interest rates will fall as the bank reserves increase. But this extension of credit cannot continue forever. Soon the banks approach the period when they get "loaned up". Then the interest rate rises, and the



contraction of credit begins. The interest rate does not move in cycles as do the other indices of credit. The reason for this was given in chapter IV. But nevertheless control of credit is exercised through the interest rate\*. This explanation will account for these movements, to a certain extent, but it is clearly not the entire story, although it is an important part. Many other indices, which are not affected by the credit situation outlined, show this major cycle. The movement is a characteristic one and involves the very fundamentals of business enterprise, which have not yet been satisfactorily explained. For this reason, these movements in the case of the indices of the prices of stocks cannot be explained entirely, although the influence of credit and the control exercised by the rate of interest are believed to have an important part in this movement.

The minor cycle, in many respects, may be said to be the most important movement that the general price level of stocks makes. This movement is a characteristic one, and practically all of the indices show the movement quite clearly. The importance of this movement lies in the fact that it is very sharply defined and that both phases, the increasing phase and the decreasing phase, are quite rapid. That is, the quantitative axis is large as compared to the temporal axis. The minor cycle shows a great contrast with the major cycle in its rapidity of movement and in its effect upon business enterprise.

The causes for the minor cycle are quite as obscure as are those for the major cycle. It is not possible to give an adequate explanation for either phenomena. The influence of money and credit in the case of the minor cycle is of a similar nature to the same forces in the case of the major cycles, and the sequence follows along the same lines. Inasmuch as this sequence has been given already in chapter IV, it need not be repeated here.

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\*Cf. Fisher, Irving, The Purchasing Power of Money, chapters IV and XI. These movements are explained by Fisher to be due to the "lagging adjustment of interest".







The seasonal cycles are movements of a very short duration and they are always embraced within a year. The decline in prices, in the case of the general price level of stocks, takes place during the fall of the year, and the prices during the following winter and spring. The declining phase of this cycle is quite rapid, but the rising phase is not so rapid. Although this cycle is very pronounced and clearly marked it is not of as great importance as the minor cycle. This is believed to be due to the fact that business units and credit institutions have learned to adjust their business to this movement. It is of so regular occurrence, and has persisted for so long a time, that it has come to be regarded as one of the "standard" situations of the business year. Were it not for this fact the several indices would show the seasonal cycle as a much more pronounced movement, and a much more important consequence for business enterprise.

The explanation for this seasonal cycle is not a hard one to make. In the first place there is a heavy withdrawal of funds from the banks, especially from the banks in the manufacturing centers. This produces a decline in the amount of credit outstanding and lowers the profit making possibilities of business enterprise. It also forces many holders of stocks to sell their shares, for they cannot get sufficient funds to hold them for the "market". During the fall of the year, also, the prices of raw commodities are seen to rise at a faster rate than are the prices of manufactured commodities. This lowers the profits of business enterprise. It is, fundamentally, the alterations in credit and business conditions, produced by the methods of harvesting, moving, shipping, and financing the crops that is at the basis of the seasonal cycle. The sequence for this movement is traced out in chapters IV and VII, and need not be repeated here.

The month to month variations in the prices of stocks are not of a



great significance. The fact that these movements do not find a counterpart in the indices of other business conditions, shows that they are of small importance for business enterprise, and that they are peculiar to the movements of the general price level of stocks. No explanation is offered for these movements, because of the fact that it was impossible to make a correlation and comparison of this movement in the case of the price level of stocks with any of the movements in the case of the other indices.

The General Price Level of Stocks as an Index of Business Conditions:-

The close correlation that the graph of the indices of the prices of stocks make with the graphs of the other indices, shows that the general price level of stocks is a very good index of fundamental business conditions. The conclusions appended to the various chapters show that the general price level of stocks registers changes in business enterprise, usually at some time in advance. This period, by which the indices of the general price level of stocks leads the other indices, varies from three to nine months, depending upon the nature of the various indices compared with the general price level of stocks.

The lag that the other indices show with reference to the general price level of stocks is due to the fact that the traders in stocks are able to discount the psychological factors; the news items, rumors, legislative enactments, etc., into a present worth. Traders in stocks endeavor to keep abreast of the times and of the various movements and currents that they believe will affect business enterprise and hence the value of the stocks with which they trade. They obtain this information from the various newspapers, journals, gossip of the street, and investment information services. This process of discounting the psychological factors which will affect the condition of business enterprise sometime in the future into a present net worth is described in chapter X.

Thus the general price level of stocks is a very satisfactory anticipatory index or barometer of the condition of business enterprise. The movements







that the indices of the general price level of stocks make indicate the movements that business enterprise will make at some time in the future. The general price level of stocks, for this reason, is perhaps the best general barometer to use in connection with the adjustment of the individual business unit to changing conditions. It is not believed that any one index is entirely satisfactory for this purpose, but if only one general index can be kept, the general price level of stocks is by all odds the most satisfactory, because of the fact that it is able to anticipate the actual working out of the conditions to a greater extent than any of the other indices studied in this investigation.

While it is greatly to be regretted that it was not possible to explain more of the movements that the various indices of business enterprise are observed to make, the value of the study of these several indices is not entirely destroyed. For the individual business unit, the problem is not so much why the various cycles and other movements are made, as it is what these movements are, and how the individual business unit can be adjusted to these movements. These movements, especially the minor cyclical movement, have very important effects upon the individual business unit. The problem for the business enterpriser or business manager is twofold: what are the movements; and how can I best adjust my business to these movements? The only way that an answer can be made is through study of the movements as shown by large graphs of the several indices. No single index is enough; it is necessary to keep many indices showing different things to some extent depending upon the nature of the business. An index of the general price level of stocks should by all means be kept. These indices ought to be plotted to a large scale in order that the movements be clearly distinguished. If this is done it can easily be seen what movements are in progress; what movements have been recently in progress; and what is indicated for the future by the trend of the present movements.



The net effect of study of this sort and <sup>of an</sup> adjustment of the individual business units to these movements will be towards a gradual slackening in these movements; they will become shorter of duration and of less intensity. In this way the business panic or crisis can gradually be reduced in its severity and the elements of risk and speculation reduced to a minimum. It will tend to stabilize industry and business enterprise, and make for an increasing and less interrupted production.

The cyclical movement is fundamental to the facts of life itself. What is needed in all spheres of activity is not an explanation - science has well-nigh abandoned the attempt at cause and effect - but an answer to the questions of what they are, and how can I use them for improvement. The problem for business enterprise differs in no ways, at basis, from the fundamental problems of life itself.





APPENDIX A. NATURE AND SOURCE OF THE DATA; PREPAR-  
ATION OF THE GRAPHS.

At the end of this investigation there will be found a series of graphs which were used in the analysis of the general level of stock prices. In order to make the various chapters clear, it will be necessary to consider the nature of the data used in the preparation of the graphs, the sources from which the data was obtained, and finally, just what method was employed in plotting the data. As has been stated before, the indices of the prices of stocks were plotted on a chart and the other economic indices were placed into groups and then plotted on graphs.

Since the analysis is made by considering the effect of one group of indices at a time for the entire period under consideration, this division will be followed in explaining the steps taken in the preparation of the graphs, and the gathering of the data. We will begin by examining the "Index Number of Stock Prices".

The Index Number of Stock Prices:

The method chosen of representing the general level of price of stocks was that of selecting a number of stocks and making an index number of the average monthly prices of them. This index number was then plotted on a chart. The movements of this line indicate the movements of the general level of the prices of stocks for the period considered. The index number was divided into two parts: an index number of railroad stocks, and an index number of other stocks. The railroad stocks index number and the other stocks index numbers were plotted separately.

There will be found to be two breaks in these lines; the first break occurs in December, 1899, the lines beginning again at a new and lower level in

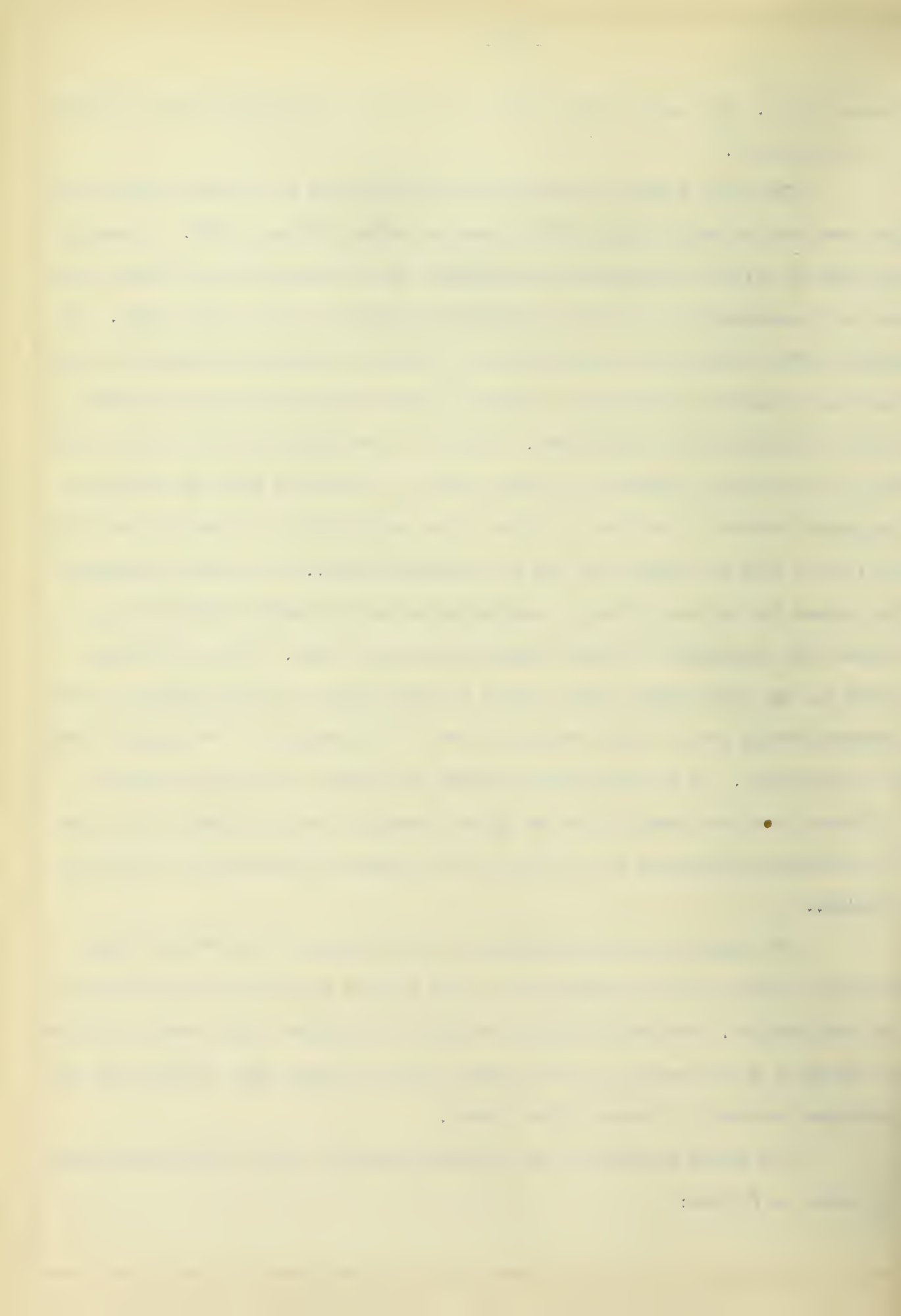


January, 1900. The second break occurs in July, 1914, and begins anew in December of the same year.

The first break was occasioned by the fact that a different index number was used for the period 1890 to 1900, from the period following 1900. It was not possible to obtain a thoroughly representative list of stocks for the entire period, and consequently it was found advisable to break the line at this point. The period 1890 to 1900 will be remembered as a period of integration among both railroad and industrial corporations, and also <sup>as</sup> a period during which many new industrial enterprises were incorporated. A choice of two alternatives was left; alter the list of stocks included in the index number to keep pace with the changes in corporate enterprise, or else a separate index number had to be made for the period 1890 to 1900 and another one for the following period. The latter alternative was chosen for the reason that a homogeneous series was thought preferable to a series, the components of which, changed from time to time. As new stocks are added and old ones dropped from a series the index number and the graph will show movements which are not truly representative of the movements of the general level of stock prices. If a stock should be added or dropped, the price of which is different by a large margin from the general average, the index number would then be seriously affected and its utility for the purpose in hand would be seriously impaired.

The second break was occasioned by the closing of the New York Stock Exchange in August 1914, following the severe decline in prices over the news of the European war. The Stock Exchange re-opened in December, 1914, with the prices of stocks at a new level, and so the index number was begun anew at this time and continued unbroken to the end of the period.

The stocks included in the railroad group from 1890 to 1900, were twenty in number as follows:





	Railroad, Common Stock		
Atchison, Topeka, and Santa Fe	"	"	"
Chicago, Burlington and Quincy	"	"	"
Chicago, Milwaukee, and St. Paul	"	"	"
Chicago and Northwestern	"	"	"
Chicago, Rhode Island, and Pacific	"	"	"
Cleveland, Cincinnati, Chicago, and St. Louis	"	"	"
Denver and Rio Grande	"	"	"
Illinois Central	"	"	"
Lake Shore and Michigan Southern	"	"	"
Chicago and Alton	"	"	"
Louisville and Nashville	"	"	"
Michigan Central	"	"	"
Missouri Pacific	"	"	"
New Central and Hudson River	"	"	"
New York, New Haven, and Hartford	"	"	"
Norfolk and Western	"	"	"
Northern Pacific	"	"	"
Southern Pacific	"	"	"
Union Pacific	"	"	"
Wabash	"	"	"

The stocks included in the other stocks group from 1890 to 1900 are eight in number as follows:

	Common Stock	
American Cottonseed Oil Company	"	"
Consolidated Gas Company	"	"
Edison General Electric Company*	"	"
National Lead Trust**	"	"
Pacific Mail Steamship Company	"	"
Sugar Refineries Company***	"	"
Tennessee Coal and Iron Company	"	"
Western Union Telegraph Company	"	"

The period selected was a month. Fluctuations of a period shorter than a month were felt to be usually of small significance for the purpose, and a period longer than a month would vitiate many important movements.\*\*\*\* Consequently, an index number for each month of the period considered was made. The data for these index numbers, for both the railroad and the other stocks, was taken

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\*Name changed and company reorganized as "General Electric Co." in June, 1892.

\*\*Name changed and company reorganized as "National Lead Co." in January, 1892.

\*\*\*Name changed and company reorganized as "American Sugar Refining Company" in January, 1891.

\*\*\*\*See a review of Wesley Clair Mitchell's Business Cycles by O.M.W. Sprague in The Journal of Political Economy, Vol. 24; p. 609. In this connection Cf. Copeland, M. T., Statistical Indices of Business Conditions, Quarterly Journal of Economics, Vol. 29, page 522.

Both these articles contain comments on the relative merits of annual and monthly data as an index of business conditions.



from the Financial Review, an annual periodical published by the same firm that publishes the Commercial and Financial Chronicle. In this journal a monthly record is kept of the highest and lowest prices for each month of the stocks traded in on the New York Stock Exchange. The monthly index number for each group of stock prices was compiled by taking an arithmetical average between the highest and the lowest prices for the month for each stock and then adding up these average prices for all the stocks and dividing by the number of stocks considered. This gives what is known as an unweighted, arithmetical sum index number. A separate index number was so computed for each month of the period. No system of relative indices was used based upon a fixed period as a base or upon a moving base. The average price for each month was computed in the manner indicated and then entered upon the graph and connected by line with the average price for the previous month.

There are several other methods for the construction of an index number of the general level of price based upon monthly data. A weighted index number might have been used. This index number could have been weighted on a basis of the number of shares outstanding, the earnings, the number of shares sold, the volume of sales of the business, or upon any plan that would in some manner indicate the relative importance of the business. A geometric mean could have been used in place of the arithmetical mean. The median or mode could have been used in place of either. Relative indices could have been used based upon some particular period as a base, or else a system of link relatives (upon a moving base) could have been used\*. In preference to all of these, however, the simple, unweighted, arithmetical mean of the highest and lowest prices for the month was used. This conclusion was reached from the following reasons:-

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\*For a critical discussion of the various methods for making index numbers of the prices of stocks see Mitchell, W. C., A Critique of Index Numbers of the Prices of Stocks, The Journal of Political Economy, Vol. 24, pages 625-693.







Weighting: It was decided not to weight the stocks included in the index number because no really satisfactory system of weighting could be devised for the purpose at hand. If we take capitalization as a basis, we are apt to go astray, for the capitalization is no satisfactory index of the importance of corporate enterprise. The same argument can be raised against any system of weights, such as number of shares outstanding, volume of sales, earnings, or number of shares traded in on the stock exchange on the average. While one system of weights would give preference to one factor, it would neglect the other. The problem in this connection is a dual one: the stocks must be weighted according to the importance of the industry they represent as a business enterprise, and also the importance of the stock in the trading on the stock exchange. The importance of corporations, from both points of view, varies from time to time, and a constantly shifting system of weights would be necessary. While it might be possible to devise a system of weighting that would serve the purpose fairly well, the labor entailed would be all out of proportion to the gain in the accuracy of the statistical data.

Type of Mean used: The simple arithmetical mean was chosen in preference to the geometric mean, the median, and the mode. The use of the median and the mode presents some statistical difficulties, and they are liable to be a source of error unless very carefully used. The geometric mean offers little more than the arithmetical and now has been discarded almost entirely for use in making index numbers. The weight of opinion is now in favor of the arithmetical mean for purposes similar to the one at hand\*.

Absolute or relative indices: The last problem faced in this connection was whether to use a relative index number or an absolute (independent of any base) index number. The latter type of index number was chosen as the most representative for the purpose. It was desired to show the greatest dispersion possible, and to show the variations as they actually occurred, allowing full emphasis upon all the movements. When using a base made up of either one particular period or a moving base (chain or link relatives), the dispersion of the various movements is not so great. Further, no logical reason could be found in expressing the movement as a percentage of one kind or another of some particular period. The writer believes that much the force of the various movements are lost when they are expressed as percentages.

This subject has been involved in controversy for sometime, and altogether too much stress has been laid upon some of the so-called "refined" methods. In this connection there are really only two problems of importance. The first is the selection of a representative list, and the second is accuracy in obtaining the original data. Both these problems have received much care and consideration in the preparation of this investigation.

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\*For a discussion of the relative values of the various methods of preparing index numbers the reader is referred to The Making and Using of Index Numbers, Department of Labor, Bureau of Statistics, number 173. The author of this pamphlet is Dr. W. C. Mitchell.





Some difficulties were entailed in obtaining a homogeneous series for the entire period. It was desired to obtain a homogeneous series at all costs. This will account for the fact that there are only eight other stocks listed, and that the railroad group omits some lines of considerable importance. The sacrifices were made in the interests of homogeneity.

For some months it was not possible to obtain quotations for certain of the stocks, because there were no sales of the particular stock in lots of one hundred shares or more. In these cases the price was interpolated. An arithmetical mean was computed between the price on the month of last quotation and the month when trading was resumed. It was thought better to interpolate the prices in this fashion than to merely omit that stock for the month, because the index number would be affected one way or the other if the price of the stock omitted did not happen to coincide with the general level, and hence a false movement of price would be shown for that particular month.

One other problem was faced that really admitted of no satisfactory solution. This problem arose whenever a stock went "ex-dividend" or "ex-rights". When a stock goes "ex-dividend" it means that the stock transfer books of the company have been closed and that stock sold after this date will not be transferred on the books of the company until after the dividend is paid. The new purchaser will not receive the dividend although the date for the payment of the dividend will not be passed by the time the sale was made. Although the sale may have been <sup>made</sup> say, to-day, and the date for the payment of the dividend some time the following week, the new purchaser would not receive the dividend, which would then go to the holder of the shares who was on the books of the company at the time they were closed. This is, of course, only important for stocks that pay dividends regularly. Regular dividend paying stocks will reflect their approach to "dividend day" by a gradual increase in price to correspond to the amount of





the gradually accumulating dividend\*. Stocks are always sold "flat". Now on the day that the stock goes "ex-dividend", the amount of the dividend is at once deducted from the face of the stock, e.g., if a stock paying dividends at the rate of 3% quarterly closed on the exchange at a price of 75 and went ex-dividend the same evening, the opening price would at once be 72, provided no important change took place in the market value of the stock over night. A stock that goes "ex-rights" is not quite in a similar position. "Ex-rights" may mean several things, but, generally speaking, it means the right to subscribe for a certain amount of new stock before the stock is placed on the general market. These rights expire on a certain day, and if they are thought to be valuable, the market price of the stock declines the imputed value of these rights after it goes "ex-rights"\*\*. As soon as the rights have been announced, the value of them will be added at once to the current market price of the shares. This produces a disturbance, then, to the "normal value" of the shares. For this problem, no solution of a satisfactory nature was reached. Rather than alter the prices of many stocks over a very considerable period of time, these disturbances were allowed to remain. Of course, they will affect the general level of the prices of stocks, but this disturbance will be practically lost in the general average.

Stocks are always quoted to one-eighth of a point. In making the averages of prices these fractions were reduced to decimals after the usual method of giving two decimal places after the point, in case the third decimal was over five a unit was added to the second place; in case it was less than five, a unit was subtracted.

So much for the period of 1890-1900. We pass now to a consideration of the preparation of the index number for the period 1900-1918.

The index number of stock prices for the period 1900-1918 is that com-

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\*Gibson, Thomas, The Cycles of Speculation.

\*\*Ibid.



piled by the Dow-Jones Company in their publication, The Wall Street Journal. These figures have been conveniently summarized in The Review of Economic Statistics, Preliminary Volume, Number 2, published by the Harvard University Committee on Economic Research. The index number has been taken from the tables published in this volume of The Review, because of the convenient form in which the figures were given, and also from the fact that a great deal of time could be saved by so doing, at practically no expense of accuracy, for the compilations made by The Review have been made with great care and precision and we have every reason for faith in their accuracy. Further, it was not felt advisable to duplicate any work along these lines that had already been done well and carefully.

The index number for both the railroad group and the other stocks group was obtained from this same source. We will first examine the railroad group.

In July, 1905, the Dow-Jones list of twenty railroad stocks contained the following shares\*:-

	Railroad, Common Stock		
Atchison, Topeka, and Santa Fe	"	"	"
Brooklyn Rapid Transit Company	"	"	"
Canadian Pacific	"	"	"
Delaware and Hudson	"	"	"
Chicago and Northwestern	"	"	"
Chicago, Milwaukee, and St. Paul	"	"	"
Metropolitan Street Railway	"	"	"
Erie	"	"	"
Louisville and Nashville	"	"	"
Northern Pacific	"	"	"
Missouri Pacific	"	"	"
N. Y. Central	"	"	"
Pennsylvania	"	"	"
Philadelphia and Reading	"	"	"
Southern Pacific	"	"	"
Southern	"	"	"
Union Pacific	"	"	"
Norfolk and Western	"	"	"
Baltimore and Ohio	"	"	"
Illinois Central	"	"	"

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\*This data, as well as the actual index number of railroad stocks was taken from The Review of Economic Statistics, Prel. vol. 2. The information and data relative to the index number of other stocks was obtained from this source also.





On May 4th, 1906, the Twin City Rapid Transit Company was added to this list, and the Metropolitan Street Railway dropped. The average was raised 12/100 of one per cent by this change. On April 25th, 1912, Brooklyn Rapid Transit Company, and the Twin City Rapid Transit Company, were dropped from the list and replaced by The Lehigh Valley Railroad and the Rock Railroad respectively. The average was raised 41/100 of one per cent by these changes. On December 12th, 1914, The Chicago and Northwestern Railroad, The Rock Island Railroad, the The Missouri Pacific Railroad were dropped from the list and were replaced by Chesapeake and Ohio Railroad, The Kansas City Southern Railroad, and The New York, New Haven, and Hartford respectively. The average was lowered 2.96% by these changes. No further changes were made in the list of railroad stocks for the remainder of the period that we consider. We pass now to an examination of the index number of other stocks.

In July, 1905, the Dow-Jones list of twelve "industrial stocks" (the term "other stocks" is used throughout in this inquiry as it was thought to be more descriptive of the stocks than the term "industrial stocks", which is used by the Dow-Jones Company) contained the following shares:-

American Smelting Company	Common
Amalgamated Copper Company	"
U. S. Rubber Company	1st Preferred
National Lead Company	Common
U. S. Steel Corporation	Preferred
People's Gas Company	Common
U. S. Rubber Company	"
U. S. Steel Corporation	"
American Sugar Refining Company	"
Tennessee Coal and Iron Company	"
Colorado Fuel and Iron Company	"
American Car and Foundry Company	"

On November 7th, 1907, The Tennessee Coal and Iron Company was dropped from the list and was replaced by The General Electric Company (common). The average was lowered 4/100 of one per cent by this change. On May 11th, 1912, The Colorado Fuel and Iron Company was dropped and was replaced by The Central Leather



Company (common). The average was lowered 21/100 of one per cent by this change. These were the only changes made in this list up to the time of the closing of the New York Stock Exchange in 1914. After the re-opening of the Exchange in 1914 the Dow-Jones Company began using a list made up of 20 "industrial stocks". The period during which the stock exchange was closed gives the second break in our index number of stock prices. After the re-opening of the exchange, the list of twenty stocks was used instead of the list of twelve stocks, although the list of twelve stocks was compiled as far as 1916. It was felt to be more advisable to use the larger and, perhaps, more representative list. Accordingly, the index number for the other stocks group for the period 1914-1918 is composed of twenty stocks, as compiled by the Dow-Jones Company. Those twenty stocks are:-

American Beet Sugar Company	Common Stock
American Can Company	" "
American Car and Foundry Company	" "
American Locomotive Company	" "
American Smelting and Refining Company	" "
American Sugar Refining Company	" "
American Telephone and Telegraph Company	" "
Anaconda Copper Mining Company	" "
Baldwin Locomotive Company	" "
Central Leather Company	" "
General Electric Company	" "
Goodrich Tire and Rubber Company	" "
Republic Iron and Steel Company	" "
Studebaker Automobile Company	" "
The Texas Oil Company	" "
U. S. Rubber Company	" "
U. S. Steel Corporation	" "
Utah Copper Mining Company	" "
Westinghouse Electric Company	" "
Western Union Telegraph Company	" "

No changes were made in the list of twenty stocks for the period under consideration.

Both groups of stocks, the railroad stocks and the industrial stocks, were worked into index numbers in the same manner. Both sets of data were obtained from The Review of Economic Statistics. The monthly indices were obtained by taking the average daily high and low figures for each security and computing,





on the basis of the arithmetical mean, between the high and the low prices, the index number for the month. Thus the index numbers for the period 1900-1918 were compiled in essentially the same fashion as were those for the period 1890-1900. The Dow-Jones figures were used, because the work of compilation had already been done, and because these figures had survived the test of time and were familiar to students of this type of data.

The nature and source of the data for the index numbers of the prices of stocks has now been examined in some detail and we are now ready to see just how these indices were plotted on the chart.

On this chart the horizontal axis (x axis, co-ordinate, or the abscissa, as it is sometimes called) represents the element of time. It is divided into spaces one quarter of an inch long along its lower and upper boundary, each quarter inch space representing one month. Every three inches a vertical line is drawn across the chart which indicates the yearly divisions. Along the vertical axis (y axis, co-ordinate, or ordinate, as it is sometimes called) the chart was divided into one quarter inch spaces, each quarter inch indicating one point of quantitative measure. In the case of the index number of stocks, one quarter inch represented one point in the prices of stocks. At every ten points a horizontal line was drawn across the chart to facilitate measurement and comparison. In the case of the stocks the base line begins with forty instead of zero. This was done to conserve the size of the chart. The index numbers of the general price level of stocks were then entered in their proper place relative to the elements of time and quantity which the number represented. The index numbers were then connected by heavy lines; a solid line being used in the case of the railroad stocks, and a broken line used in the case of the other stocks. A small circle was drawn about each index number, except for the months of January of each year, when a slightly larger circle was drawn. This was done to facilitate the location of the various points on the graph. This graph will be found appended to the end of this inves-



tigation.

We can now proceed to examine in similar fashion the various other groups of indices used in this inquiry. We will begin with the "Dividends and Earnings Group".

Dividends and Earnings Group:

This group is composed of the following factors:- Earnings, gross, of ten leading railroads; earnings, gross, of the railroads used in the preparation of the index number of railroad stock prices; dividend payments, railroads used on the index number; dividend payments, all railroads; dividend payments, corporations whose stocks were used in the preparation of the index number of other stocks. Each factor will be considered separately.

Gross earnings of ten leading railroads:- This data <sup>here</sup> ~~was~~ taken from The Review of Economic Statistics, where it was obtained from Babson's Desk Sheet.

Since access was not to be had to a complete file of these desk sheets, the data <sup>here</sup> ~~was~~ taken from The Review. The ten leading railroads are: Atchison, Topeka, and Santa Fe; Atlantic Coast Line; Baltimore and Ohio; Central of New Jersey; Illinois Central; Missouri, Kansas, and Texas; Pennsylvania; Chicago, Rock Island and Pacific; Southern Railway; and Union Pacific. These railroads embrace at least 25% of the earnings of all the roads in the United States. The data <sup>are</sup> ~~is~~ monthly, and begins with January 1912, and ends in June 1917. Only three significant figures were used in connection with this data, and the decimal point was placed after the second figure. The earnings are thus reported in millions of dollars carried to the first decimal place. In plotting these figures on the graph, the same scale was used as in the case of the index numbers of stock prices; time element along the horizontal axis, and millions of dollars of earnings along the vertical axis. The various points for each month were connected by a solid line. A glance at the graph will show just how this has been done.

Gross Earnings of railroads used on Index Number:- This data <sup>here</sup> ~~was~~ obtained







from the Statistical Report of the Interstate Commerce Commission. The data was obtained for the period 1890-1907. After 1907 the Commission changed its system of reporting earnings, which made it impossible to secure a homogeneous series past this point. The data <sup>all</sup>~~is~~ annual and but three significant figures were used, so the data was reported in millions of dollars to the first decimal point as the gross earnings of ten leading railroads was reported. The data <sup>here</sup>~~was~~ entered upon the graph in a similar manner to that of the gross earnings of ten leading railroads, except that in this case the data <sup>here</sup>~~was~~ annual instead of monthly, and the points on the graph were connected by dotted lines.

Dividend Payments of Railroads used in the Index Number:- The data for this factor <sup>here</sup>~~was~~ obtained from The Financial Review. In this source the data <sup>here</sup>~~was~~ reported in whole numbers and fractions. For purposes of plotting it upon the graph the fractions were translated into decimals, and the decimal point, instead of being placed after the first whole number, were placed after the first decimal point that is to say, the decimal point was shifted one place to the right. This was done to bring out the fluctuations in the dividend payments more clearly than would have been the case if the decimal point had been placed in its regular place. The dividends were obtained for all the railroads used in preparing the index number of stock prices for the respective periods. Whenever a change of company was made, this change was also made in obtaining the dividends, so the dividend figure actually represents the dividends paid out by the railroads used on the index. In plotting these figures on the graph, a line composed of dashes was used to distinguish it from the other lines. The data, of course, <sup>all</sup>~~is~~ annual in its nature.

Dividend Payments of All Railroads:- This <sup>all</sup>~~data is~~ of an annual nature and was included as a supplement to the "Dividend Payments of Railroads used on the Index", so as to give a check on the representative character of the index number. The data <sup>here</sup>~~was~~ obtained from The Statistical Report of the Interstate Commerce Commission. In this case the data <sup>here</sup>~~was~~ obtained to two decimal places. Again the



decimal point was moved one place to the right to lay emphasis on its movements. It was plotted to the same scale that all the other graphs - in fact, the same scale has been used throughout in plotting, and is the same for the index numbers of the prices of stocks and all the other indices. A line composed of one dash and one dot was used to connect the points on the chart in order to distinguish it from the other lines.

Dividend Payments of Corporations used in the Preparation of the Index Number of Other Stocks:- This data is also annual in character and was obtained from The Financial Review. The decimal point was moved one place to the right in plotting the items upon the graph for the reason already given. It was plotted in the same manner that the other dividends were plotted except that the items on the chart were connected by a line made up of one dash and three dots. All the corporations used in the preparation of the other stocks index number were used, and whenever a change of corporation was made on the index, a similar change was made in the dividends.

This concludes the description of the data and graphs for the Earnings and Dividends Group. All the indices mentioned and included were plotted on the same chart for convenience in comparison. This chart will be found at the end of this paper, and should be studied in the light of the material given in this chapter. We pass now to a consideration of the next group.

#### Monetary and Banking Group:-

This group is composed of the following factors:

Interest Rates: Demand Loans on the New York Stock Exchange  
Rate on 60-90 day commercial paper  
Rate on 4-6 months commercial paper  
Average rate of interest on 10 Am. RR Bonds

Average Reserves, New York City Banks  
Average Loans, New York City Banks  
Average Deposits, New York City Banks

Total amount of Money in Circulation in the United States.







Interest Rates:- The data for all the interest rates <sup>have</sup> ~~was~~ taken from The Review of Economic Statistics, where <sup>they</sup> ~~it~~ had been obtained from various sources; much of ~~it~~ coming from Business Cycles by Wesley Clair Mitchell, which was supplemented by The Commercial and Financial Chronicle. The methods used in the compilation of these interest rates have been investigated, and the rates are believed to be accurate and representative\*. The interest rates were computed to two decimal places in all instances. In plotting the interest rates on demand loans, 60-90 day commercial paper, and 4-6 months commercial paper, the decimal point was left in its normal place. In the case of the interest rate on the ten American railway bonds, the decimal point was moved one place to the right. This was done to prevent confusion on the chart which would have resulted from the movements of the four rates, since they moved together so closely, and also to bring out the fluctuations in this rate, which would have been obscure had a smaller unit been used. The rate for demand loans at the New York Stock Exchange is the rate on "call" money for use in the financing of the purchase and sale of securities. This rate is subject to extreme fluctuations, and is of great importance in connection with the general level of prices of stocks. On the chart this rate is shown by a thin dotted line. The rate of interest on 60-90 day commercial paper is the rate on choice double name commercial paper running sixty to ninety days. This rate is of much importance in connection with the state of business enterprise. It is represented on the chart by a thin double line. The rate of interest on 4-6 months commercial paper is the rate on good single name paper running from four to six months. This rate is of much importance in connection with the state of business enterprise. It is represented on the chart by a thin line made of dashes. The rate of interest on ten American railway

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\*For the method used in obtaining the various interest rates see The Review of Economic Statistics, Preliminary Vol. 1, No. 1, pp 45-47, or Mitchell, W. C., Business Cycles, pp 141-175.





bonds is a computation of the yield of ten selected railway bonds\*. This rate is of much importance in considering the state of the investment market. It is represented on the chart by a thin solid line. The data for all the interest rates is monthly - a monthly average of the various quotations of the month is made, and this average is held to be the characteristic rate for the month. The period embraced by all these interest rates is from 1890-1918.

Average Reserves, Average Loans, Average Deposits of New York City Banks: This data <sup>are</sup> ~~is~~ all monthly in character. <sup>They were</sup> ~~It was~~ obtained from The Review of Economic Statistics\*\*; where <sup>they were</sup> ~~it was~~ obtained from a variety of sources. The methods employed by this Journal have been investigated and the data <sup>are</sup> ~~is~~ believed to be accurate and representative. The average reserves of the New York City banks are the monthly average of the total reserves of all the New York City Clearing House banks. This figure will represent the average reserves of the total that all the various banks belonging to the clearing house carried for the month in question. The figures are carried from 1890-1914. After 1914, the Federal Reserve System was inaugurated, and it was, therefore, not possible to secure a significant, homogeneous, series beyond that point. The data <sup>are</sup> ~~is~~ reported in millions of dollars and <sup>are</sup> ~~is~~ carried to one decimal place on this basis. In entering this data upon the chart the decimal point was moved one place to the left, and so, for purposes of this study, we may consider the figures as reported in ten millions of dollars. The decimal point was moved to reduce the extreme dispersion of this series, and also to make it possible to plot the movements on a chart of reasonable size. With the decimal point at this place, the fluctuations show nicely, and are entirely satisfactory for the purpose. This data <sup>are</sup> ~~is~~ shown on the chart by a heavy dotted line. The average loans of the New York City Banks are the average month-

\*For the method used in compiling this rate see The Review of Economic Statistics, Preliminary Vol. 1, No. 1, page 45; or Mitchell, W. C., Business Cycles, pp 141-142

\*\*For the method used in compiling this data see The Review of Economic Statistics, Prel. vol. 1, no. 2, pp 149-151.





ly loans of all the banks in the New York Clearing House Association. The figures are carried from 1890-1914. After 1914, trust companies were included in the Clearing House returns, and it was not possible to obtain a homogeneous series past that date without considerable difficulty. The data <sup>will</sup> ~~was~~ originally reported in millions of dollars, but for convenience in plotting the items on the chart, the decimal point was moved one place to the left, and so the figures on the chart are in ten millions of dollars carried to one decimal place. This step was taken to keep the chart within a reasonable size. The fluctuations are clear and distinct upon this basis. This <sup>are</sup> ~~data~~ ~~is~~ shown upon the chart by a heavy line composed of one dash and one dot. The monthly average deposits of New York City Banks are the average deposits for a month of all the banks in the New York Clearing House Association. The figures are carried from 1890-1914. After 1914 it was not possible to obtain a series homogeneous with the prior period because trust companies were included in the returns made by the Clearing House. The deposits were originally reported in terms of one million dollars, but for convenience in plotting upon the chart, the decimal point was moved one place to the left, and so the figures on the chart are in terms of ten million dollars carried to one decimal place. This <sup>are</sup> ~~data~~ ~~is~~ represented upon the chart by a heavy line composed of dashes.

Total Amount of Money in Circulation in the U. S. by Months: This <sup>will</sup> ~~data~~ ~~was~~ obtained from The Annual Reports of the Secretary of the Treasury (financial) and <sup>are</sup> ~~is~~, of course, an estimated figure, because we have no means of telling just how much money is in circulation, due to the loss and destruction of a certain amount. The estimate is accurate enough, however, for the purpose. The data <sup>are</sup> ~~is~~ monthly in character and <sup>are</sup> ~~is~~ reported in hundreds of millions of dollars carried to two significant decimal places. The data extend from 1890-1918, and include all kinds of money. The data <sup>are</sup> ~~is~~ represented on the chart by a heavy solid line.



This concludes our description of the nature and source of the data, and the preparation of charts for the monetary and banking group. All the indices in this group have been included on one large chart, which will be found appended to this investigation. We pass now to a discussion of the Business Enterprise Group.

Business Enterprise Group:-

For convenience in plotting upon the chart, and also to prevent confusion in studying the chart this group has been divided into two parts, parts one and two, respectively. It is not claimed that this division is a logical one, it was made chiefly in the interests of convenience and simplicity.

Business Enterprise Group, Part I:-

Part one of this group consists of the following indices: Monthly Bank Clearings in New York City; Monthly Bank Clearings outside New York City; Unfilled Orders of the United States Steel Corporation; Yearly Listings of Stocks on the New York Stock Exchange; Yearly Listings of Bonds on the New York Exchange.

Monthly Bank Clearings in New York City and Outside New York City: The data for these factors <sup>was</sup> ~~was~~ obtained, for the period 1890-1902, from the Commercial and Financial Chronicle, and for the period 1903-1918 from The Review of Economic Statistics. The series is homogeneous, because The Review used The Chronicle as its source in gathering ~~the~~ data, and their method employed in gathering the data was the same as that employed by the writer of this paper. The Review was used in order to save time in the compilation of the data, and because it was felt that there would be no benefit derived from a duplication of work done well once already. The data <sup>are</sup> ~~is~~ reported in terms of hundreds of millions of dollars carried to one decimal place. The bank clearings in New York are shown on the chart by a line composed of dashes. The bank clearings outside New York are shown by a line composed of dots.







Unfilled Orders of the U. S. Steel Corporation: This data <sup>has</sup> ~~was~~ obtained from The Review of Economic Statistics. This data <sup>has</sup> ~~was~~ in turn obtained from The Commercial and Financial Chronicle and also directly from officers of the U.S. Steel Corporation.\* The data extends from 1902-1918. From 1902 to 1910, the data <sup>are</sup> ~~is~~ reported quarterly, thereafter <sup>they are</sup> ~~it is~~ monthly in character. In The Review the data <sup>has</sup> ~~was~~ reported in terms of ten thousand tons, but for convenience in plotting upon the chart, the decimal point has been moved one place to the left, and so the items plotted upon the chart are in terms of hundreds of thousands of tons carried to the first decimal point. This data <sup>are</sup> ~~is~~ represented upon the chart by a solid line.

Yearly Listings of Stock and Yearly Listings of Bonds on the New York Stock Exchange: This data <sup>are</sup> ~~is~~ annual in character and <sup>has</sup> ~~was~~ obtained from The Financial Review. It extends from 1890-1917. The items are reported in terms of ten millions of shares or bonds carried to the first decimal place. The stocks are shown on the chart by a line composed of one dash and one dot and the bonds are shown by a line composed of one dash and three dots.

All the above indices have been plotted as indicated upon one large chart, which will be found appended to this paper.

#### Business Enterprise Group, Part 2:-

This group is composed of the following indices: Monthly Business Failures; New Incorporations in the Eastern States involving more than \$1,000,000 Monthly Tonnage of Pig Iron; Monthly Values of Building Permits Issued by twenty Leading Cities; and Shipments of Anthracite Coal.

Monthly Business Failures: This data <sup>has</sup> ~~was~~ taken from The Review of Economic Statistics. <sup>They are</sup> ~~It is~~ there reported from Bradstreet's in units of one failure. For use in plotting this data on the chart a unit composed of hundreds of business

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\*For the exact method employed in collecting this data see The Review of Economic Statistics, prel. vol. 1; No. 1; pp 43 and 80.



failures was used, carried to two decimal places. The data extend~~s~~ from 1893-1918 and is monthly in character. <sup>They are</sup> ~~It is~~ represented on the chart by a dotted line.

New Incorporations in the Eastern States Involving \$1,000,000 or more:

This <sup>are</sup> ~~data is~~ monthly in nature and <sup>was</sup> ~~was~~ taken from The Review of Economic Statistics, where <sup>they</sup> ~~it~~ had been compiled from The New York Journal of Commerce. The data extend~~s~~ from 1901-1918 and <sup>are</sup> ~~is~~ represented on the chart by a line composed of dashes. The original items were in terms of one million dollars of authorized capital stock, but for purposes of plotting upon the chart, they are recorded in terms of ten millions of dollars carried to one decimal place.

Monthly Tonnage of Pig Iron: This <sup>are</sup> ~~data is~~ monthly in nature and was taken from The Review of Economic Statistics, where <sup>they</sup> ~~it~~ had been compiled from The Iron Age. The data extend~~s~~ from 1903-1918. The original items were reported in The Review in terms of one thousand tons, but for purposes of plotting upon the chart, they were recorded in terms of one hundred thousands of tons, carried to two decimal places. The data <sup>are</sup> ~~is~~ represented on the chart by a solid line.

Monthly Values of Building Permits Issued by Twenty Leading Cities: This <sup>are</sup> ~~data is~~ monthly in nature, and was taken from The Review of Economic Statistics, where <sup>they</sup> ~~it~~ had been compiled from Babson's Desk Sheet. The data extend~~s~~ from 1903-1918. The original items were reported in terms of one hundred thousand dollars, but for purposes of plotting on the chart, they were recorded in terms of millions of dollars carried to one decimal place. The data <sup>are</sup> ~~is~~ represented on the chart by a line composed of one dash and one dot.

Shipments of Anthracite Coal: This <sup>are</sup> ~~data is~~ annual in character for the period 1890-1900, and monthly in character from 1900 to 1917. It was not possible to secure a homogeneous series composed of monthly data throughout. Since the annual data differ~~s~~ from the monthly data, the line on the graph is broken







at this point and is not connected. The data <sup>has</sup> ~~was~~ obtained from The Financial Review. <sup>They are</sup> ~~It is~~ here recorded on the chart in terms of one million tons carried to one decimal place. The data <sup>are</sup> ~~is~~ represented on the chart by a line composed of one dash and three dots.

All these indices were plotted upon a graph to the usual scale, as indicated in a previous paragraph. The next group to occupy our attention is "The Crop Production Group".

#### Crop Production Group:-

This group is composed of the following indices: Production of wheat, corn, oats, cotton, and potatoes in the United States. The data <sup>are</sup> ~~is~~ entirely annual in character and extend from 1891-1917. It was obtained from The Financial Review, where <sup>they</sup> ~~it~~ had been obtained from the official reports of the United States Department of Agriculture. Wheat is here recorded in terms of ten millions of bushels, carried to one decimal place and is represented on the chart by a solid line. Corn is here recorded in units of one hundred million bushels carried to one decimal place and is represented on the chart by a line composed of one long and one short dash. Oats are here recorded in terms of ten million bushels carried to one decimal place, and is represented on the chart by a line composed of one dash and three dots. Cotton is here recorded in terms of ten million bales, carried to one decimal place, and is represented on the chart by a line composed of dashes. Potatoes are recorded in units of ten million bushels, carried to one decimal place, and are represented on the chart by a line composed of one dot and one dash.

All of these indices were plotted on one chart to the usual scale. The next group for consideration is "The Commodity Price Group".

#### Commodity Price Group:-

This group is composed of index numbers of the prices of raw commodi-



ties, manufactured commodities, and all commodities. All three of these index numbers are the United States Bureau of Labor Wholesale Indices of Commodity Prices\*. The wholesale prices are the better prepared, and <sup>are</sup> also the better adapted for purposes of this investigation. Consequently, they were chosen in preference to the retail prices. The data for all three indices <sup>are</sup> ~~is~~ annual for the period 1890-1900, but ~~is~~ monthly from this period on. The Bureau of Labor has not as yet carried their monthly computations past this point. A break in all three lines on the chart is noticed in the year 1914, and a new series is continued from this year on. In 1914 the Bureau of Labor made a change in their method of computing the index numbers, and consequently a totally different index was obtained for the periods following 1914. Therefore, it was not felt advisable to connect these two periods. The indices extend through the year 1916. The indices are recorded on the chart in the original units just as reported by the Department of Labor. The index of raw commodities is represented on the chart by a line composed of one dash and one dot. The index of manufactured commodities is represented on the chart by a dotted line. The index of all commodities is represented on the chart by a line composed of dashes.

All three indices were plotted on the same chart to the usual scale.

The next group for consideration is the "Foreign Trade Group".

Foreign Trade Group:-

This group is composed of the following indices: monthly imports of merchandise to the United States; monthly exports of merchandise from the United States; and average monthly rate of "demand" sterling exchange.

Monthly Imports of Merchandise into the United States: This <sup>are</sup> ~~data~~ ~~is~~ en-

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\*A description of these indices will be found in No. 149 of Bureau of Labor Publications, Wholesale Prices. The data from 1890-1913 was taken from this publication. The later data came from the subsequent publications. For a critical examination of the methods employed, and an evaluation of these indices see #173 of the same series, dealing with The Making and Using of Index Numbers. This pamphlet was written by Dr. W. C. Mitchell.







tirely monthly in character and extend<sup>They have</sup> from 1892-1917. <sup>It was</sup> obtained, for the period 1892-1902, from The Monthly Summary of Foreign Commerce of the United States. For the period 1903-1917, ~~it was obtained from~~ The Review of Economic Statistics, where <sup>they</sup> ~~it~~ had been obtained from The Monthly Summary of Foreign Commerce of the United States. Since it was easier to obtain the figures from The Review, this source was used in place of the former. The data <sup>have</sup> ~~has~~ been recorded on the chart in terms of ten million dollars. This data <sup>are</sup> ~~is~~ represented on the chart by a line composed of dots.

Monthly Exports of Merchandise from the United States: This data <sup>are</sup> ~~is~~ also entirely monthly in character and extend<sup>They have</sup> from 1892-1918. <sup>It was</sup> obtained entirely from The Monthly Summary of Foreign Commerce of the United States. <sup>They</sup> ~~It~~ <sup>have</sup> ~~has~~ been recorded on the chart in terms of ten million dollars, carried to two decimal places. This data <sup>are</sup> ~~is~~ represented on the chart by a line composed of dashes.

Average Monthly Rate of Demand Sterling Exchange:- This data <sup>have</sup> ~~has~~ been compiled by taking the mean between the high and low prices of demand sterling exchange for each month as recorded in The Financial Review. The data <sup>have</sup> ~~was~~ reported to four decimal places, but in recording the data on the chart the decimal point was moved one place to the right to emphasize the fluctuations. The data extend<sup>are</sup> from 1890-1917. The data <sup>are</sup> ~~is~~ represented on the chart by a solid line.

All of these three indices were recorded on the same chart under the group heading as given. The usual scale was used, as already explained. The last group considered is the "Stock Exchange Trading Group".

#### The Stock Exchange Trading Group:-

This group is composed of the following two indices: volume of sales on the New York Stock Exchange, and monthly clearings on all stock exchanges in the United States. Since both indices indicate trading activity of the stock exchange it was decided to use one index to represent trading in New York, and



the other to represent trading all over the country. The data in both instances extend from 1890-1917 and <sup>are</sup> ~~is~~ monthly in character throughout. It was obtained for both indices from The Financial Review, which gives the data in monthly form. The volume of sales is reported in units of hundreds of millions of shares sold per month, carried to two decimal places. This data <sup>are</sup> ~~is~~ represented on the chart by a solid line. The clearings, all exchanges, <sup>are</sup> ~~is~~ recorded on the chart in terms of hundreds of billions of dollars, carried to two decimal places. <sup>They are</sup> ~~It is~~ represented on the chart by a dotted line.

This completes our examination of the groups of economic factors. It may be well at this point again to emphasize the construction of the charts, all of which are similarly drawn as to scale and method. The horizontal axis is used to indicate the element of time; three inches representing one year. Vertical lines divide the charts into yearly sections, while both the upper and lower borders are divided into spaces one quarter of an inch long to indicate the months within each year. The vertical axis is used to indicate the quantitative elements, whatever they may be for the particular index or group of indices. Horizontal lines divide the charts into ten unit sections along this axis, while the borders on both sides of the charts are divided into spaces one quarter of an inch long to indicate one unit spaces. Thus all the charts are constructed to a symmetrical scale for monthly data - one quarter of an inch on the one axis representing one month of the temporal element, and one quarter of an inch on the other axis representing one unit of the quantitative element. The quantitative element differs in the various indices. Some were plotted on the charts in millions of dollars; some were plotted in tens of millions of dollars; some were plotted in tons; and others in bushels. In each instance the unit chosen was that which would bring out the movements clearly and distinctly, without undue dispersion, and yet keep the charts within a reasonable size for purposes of comparison. It may well be asked at this point: is it possible to compare fac-







tors whose quantitative unit of measure differs so widely? Can we compare millions of dollars with thousands of tons? The answer to these questions will largely depend on the purposes of the comparison. We can compare these different units when we are interested in the possible relations existing between the movements, the fluctuations, of these units. While we may not be able to compare quantitatively, bushels and dollars, we can point out significant changes in quantities so measured. That is to say, it is possible to call attention to a probable causal sequence existing between bushels of wheat and the dollar value of railroad stocks, provided, of course, that there is some similarity in the movement of these two items. This fact is clearly recognized by the process of reducing to like terms, for purposes of mathematical comparison, by the method of standard deviation. Here unlike units are reduced to similar terms for purposes of comparison. The comparison can then be made with mathematical exactitude. The units studied here have not been treated by the method of standard deviation, because no exact measurement is attempted, and it is desired to study the movements in the "raw" state, just as they occur. Some of the quantities listed here do not lend themselves to a refined treatment.

So much for the groups of economic indices. There yet remains to be considered the psychological factors affecting the general price level of stocks. Of course, these factors were not plotted graphically, since we have no method at the present time of reducing these factors to quantitative units.

#### The Psychological Factors:-

The psychological factors affecting the general level of prices of stocks may be roughly grouped under the following main headings:-

- Political events
- Legislative enactment
- Judicial decisions
- Governmental executive policy
- Accidents
- New inventions



Discoveries; mechanical and geographical  
Miscellaneous factors, such as state of health of important men,  
revivals of religious feeling, etc.

These events may actually occur, or their influence may be made felt by "rumor" or premonition. It is believed that these factors have a direct effect on the general level of stock prices over a long period of time, say, a month or more. They may have an immediate direct effect on the prices of stocks, provided the technical position of the market is weak. That is to say, if the market is "top heavy"; with the market prices in excess of the "intrinsic value" of the shares. If the technical position of the market is sound, these events may have but little direct effect upon the prices in themselves.

Now in the long run, these factors may have an effect upon the general price level of stocks directly. That is to say, they may affect the industrial situation in general, which thus affects business enterprise, and these changes are then reflected in the prices of shares in business enterprise, stocks.

The psychological factors have been gathered, in this study, from The Financial Review. The Financial Review is an annual publication and each issue contains a "retrospect" of the past year by months. It is from this "retrospect by months" that the psychological factors have been obtained. The events of greatest importance for the problem were gathered from this source and recorded on small cards, one month to each card. As the various economic factors are studied periodically with the index number of stock prices, reference will be <sup>made</sup> ~~had~~ to the important psychological factors exercising their influence at the time. Any probably or warranted conclusions will be set down for what they are worth. In the concluding chapter results of the inquiry will be summarized.





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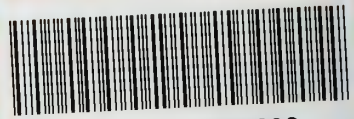


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